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ABSTRACT

This publication shares current thinking, research, and practice in the area of higher order thinking skills with home economics educators, including teachers, supervisors, and teacher educators. The first three articles provide general discussions of thinking skills. They are "Introduction" (Ruth Pestle); "Can Higher Order Thinking Skills Be Taught? By What Strategies?" (Jeanette Daines); and "Gender as a Variable in Teaching Thinking" (Edna Anderson). The next six articles focus more specifically on teaching strategies and types of thinking. Titles are "The Role of Listening, Reading, and Writing in Higher Order Thinking: Implications for Home Economics Instruction" (Cheryl Fedje); "The Role of the Future Homemakers of America Student Organization in Facilitating the Development of Critical Thinking Skills" (Wendy Way); "Critical Thinking: Phenomenological and Critical Foundations" (Francine Hultgren); "Problem Solving: Definition and Meaning" (Janet Laster); "Instructional Strategies for Teaching Practical Reasoning in Consumer Homemaking Classrooms" (Janet Laster); and "Reflective Thinking: Meaning and Implications for Teaching" (Norma Bobbitt). The final article, "The Meaning of Higher Order Thinking and Its Implementation in Home Economics Education" (Ruth Thomas), synthesizes major themes in the other articles, first analyzing "higher order thinking skills" as a slogan, and then showing how these articles should move educators beyond the slogan to greater understanding and better practice. (YLB)

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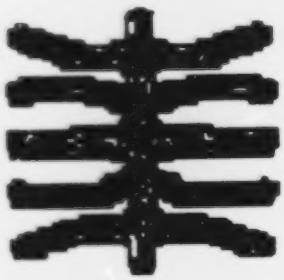
HIGHER ORDER THINKING:

DEFINITION, MEANING AND INSTRUCTIONAL APPROACHES



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FOREWORD

The purpose of this publication is to share current thinking, research, and practice in the area of higher order thinking skills with home economics educators, including teachers, supervisors, and teacher educators. The objectives of the publication are to:

1. Identify, define and develop meaning for thinking skills relevant to home economics education.
2. Examine factors that modify higher order thinking skills.
3. Focus the attention of home economics educators on thinking skills as one of the goals of home economics instruction.
4. Share instructional strategies for helping secondary and preservice teacher education students develop higher order thinking skills.
5. Share useful thinking skills references and resources.

Educators have long known that knowing subject matter is an insufficient basis for competent human functioning. Yet, our level of understanding of human learning and intellectual functions has not permitted a great deal of progress in developing ways of teaching or assessing thinking processes. The body of knowledge underlying this publication provides a foundation for increasing educators' understanding of the links between knowing, doing and thinking and of how relationships between these three elements may be addressed in unique ways in home economics education.

A major focus in all areas of education today is the impact of education on students' ability to use higher order thinking skills. The term, "higher order thinking skills," is widely used as though a well-defined, precise meaning existed. Yet, it is clear in the literature and in discussions of such skills that multiple meanings are implied, making communication concerning these intellectual processes confusing and understanding of them difficult. For example, reasoning, problem solving, decision making, and critical thinking are terms often used as though their meanings were synonymous. Further, there is little examination of how these major, general processes relate to more specific processes such as hypothesizing, estimating, judging or predicting. A result of this condition is lack of clarity and difficulty in conceptualizing curriculum for teaching these processes, and failure to assess thinking processes as part of student learning. Recent developments in the cognitive science literature and in other related bodies of knowledge provide a basis for conceptualizing, defining, observing, developing and assessing thinking processes. This publication explores part of that knowledge base and draws implications for home economics education.

The area of thinking skills is an especially significant one for home economics education to address. Unfortunately, vocational and academic areas of education are being increasingly differentiated and separated, with academic areas being most often identified as the major contributors to the development of thinking processes. Home economics educators have long claimed to teach problem solving, decision making, critical thinking, and practical reasoning skills in relation to the home and family and employment contexts. Current knowledge about higher order thinking skills suggests that it is important for home economics to teach these intellectual process skills because the context in which thinking skills are learned is related to students' ability to use their thinking skills. Consequently, if students are to be able to use these skills in relation to the home and family context or in a home economics-related employment context, the skills need to be taught in relation to concepts relevant to those contexts.

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The first three articles in this publication provide general discussions of thinking skills. Pestle provides an introduction focusing on problems of meaning in home economics, attitudes of educators and the teaching of thinking, and questions about meaning and teaching of thinking. Daines' article continues to ask questions about thinking and then proceeds to sort out meanings for thinking, identify thinking skills and conditions needed for their development. She also provides thought-provoking propositions regarding characteristics of educational environments that promote thinking. The next article by Edna Anderson looks at relationships between society, language, gender and thinking and challenges educators to meet the needs of all their students with respect to needed thinking skills.

The next six articles focus more specifically on teaching strategies and types of thinking. Cheryl Fedje's article on the role of listening, writing and reading in higher order thinking discusses myths concerning these activities, illustrates the roles that listening, writing and reading play in thinking processes, and provides guidance for lesson plans in home economics that incorporate listening, reading and writing in ways that enhance learning and thinking. The article by Wendy Way discusses critical thinking and focuses on strategies for using the Future Homemakers of America (FHA) student organization to facilitate critical thinking in home economics students. Francine Hultgren's article continues the focus on critical thinking through presentation of specific examples of home economics teachers' efforts to explore critical thinking.

The article by Janet Laster on problem solving concerns definitions of problem solving, relationships between problem solving and intelligence, components of problems, stages in solving problems, and types of problems and presents guidelines for problem solving instruction in home economics. In her second article, she focuses on a particular kind of problem of special concern in home economics, practical problems, describes reasoning processes involved in working with these problems, and shares instructional strategies for teaching practical reasoning. The article by Norma Bobbitt concerning reflective thinking is a reminder that concern with teaching thinking is not a new issue in education. She focuses on views relating to reflective thinking, why teaching reflective thinking makes sense, and why reflective thinking that is not taught is not learned.

In the final article on the meaning of thinking and its implementation in home economics education, the focus again becomes more general as I attempt to provide a synthesis of some of the major themes running through the nine articles and present an analysis of higher order thinking skills as a slogan and discuss implications for teachers.

All of the articles provide resources and references useful for home economics educators who wish to explore further their interest in thinking and home economics instruction.

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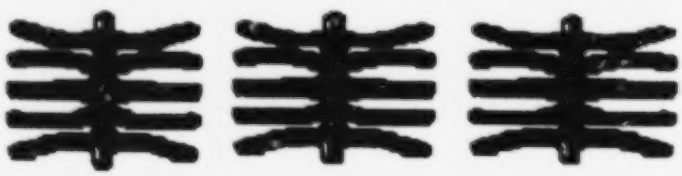
August, 1986



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INTRODUCTION

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Marjorie Brown (1985), in *Philosophical Studies of Home Economics in the United States,* claims that home economists have an anti-theoretical bias. To quote Dr. Brown:

> Much of the problem of conceptual naivete lies in the anti-theoretical, anti-reflective bias which pervades a large segment of the home economics profession. Home Economists have cultivated the norms of efficiency and quick results so thoroughly in their technical orientation that they expect the same norms to apply to intellectual activity and the making of moral evaluations. There is impatience with the task of following a line of argumentative reasoning for clear comprehension and for validating a truth claim concerning meaning or a claim to rightness. There is often unwillingness to become involved with analytical presentations and insistence on brevity. Even lexical definitions of home economics are sometimes considered adequate for those in the profession to understand what home economics can justifiably be. What is not recognized is that while a statement may be brief, unless those who read or hear it are already in agreement on the concepts involved, the statement will be interpreted in different ways by different people. Or, where readers or listeners have not adequately differentiated the concepts involved, they will not comprehend the brief statement. Or, where there is no argument to support the position taken in the statement, its acceptance or rejection will be dogmatic and uncomprehending.
>
> It is not only brevity which is expected in the name of "efficiency"; written or oral presentations must have "readability" and not tax the linguistic, conceptual, and reasoning powers of the reader or listener. Conceptual confusion and fuzziness are tolerated — even unrecognized — as long as predigested and oversimplified versions of complex conceptual relations are presented. And if the vocabulary and syntax are simple enough, each reader or listener interprets in light of his or her own conceptual equipment, sure that he or she comprehends what is said.
>
> But readability and simple language may be bought at the expense of qualitatively precise and valid concepts and an adequate sorting out of meanings and the norms which political-moral concepts describe (pp. 938-939).

Do teachers tolerate conceptual fuzziness? Are we pragmatic to a fault? While correcting a tendency toward impulsive, fuzzy, careless thought may not solve all problems regarding thinking, it is a start. Further, I suggest that home economics teachers do encourage habits of carefulness and thoughtfulness in intellectual activity. This monograph is intended to help teachers be more conscious of their efforts in teaching thinking and to strengthen their understanding of thinking skills and their ability to teach these skills.

One type of thinking particularly important in a democracy is critical thinking. Robert Ennis (1985) defines critical thinking as reflective and reasonable thinking that is focused on deciding what to believe or do. Ennis suggests three types of critical thinking skills:

1. ability to define and clarify such things as problems, issues, conclusions, reasons, assumptions
2. ability to judge the credibility, relevance and consistency of information
3. ability to infer or to solve problems and draw reasonable conclusions (p.45).

These three types of skills reflect the higher level skills of analysis, synthesis, and evaluation in Bloom's (1956) taxonomy of educational objectives.

If we accept these skills as critical thinking, we might ask what kind of attitudes on the part of home economics teachers are likely to be helpful in nurturing these skills in students? Raymond S. Nickerson (1981) suggests that the following teacher attitudes are important for helping students learn thinking skills:

1. a strong belief in the importance of learning, and in the usefulness of and intrinsic value of knowledge
2. a lively sense of curiosity and inquisitiveness
3. a sense of pride in one's work and an appreciation of the importance of carefulness; careful listening, careful reading, careful work
4. a proper regard for one's own intellectual potential and also for one's own fallability
5. a respect for opinions differing from one's own.

The following questions concerning thinking and the teaching of thinking skills will be considered in this monograph:

—What thinking skills are important for students to learn in home economics and why?

—How can thinking skills be incorporated into home economics curriculum and instruction? Should thinking skills be taught as separate units as well as infused into many segments of a program?

—How are teachers taught to teach critical thinking?

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CAN HIGHER ORDER THINKING SKILLS BE TAUGHT? BY WHAT STRATEGIES?

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Coming to grips with the question of whether or not higher order thinking skills can be taught can be a humbling experience as one wrestles with the complexities of terms like critical thinking, integrative thinking, problems solving, metacognition, creative thinking, and interaction. No one meaning prevails, nor does any one strategy of developing such processes within an instructional situation clearly seem to be the answer.

Persons from different disciplines have perspectives which integrate their experiences and understandings regarding the nature and creation of knowledge; these are brought to bear in their consideration of the problem of teaching thinking skills. For example, persons from such diverse areas of study as philosophy, engineering, English, soil science, psychology, education, management, social work, and business would all stress the importance of helping students develop their ability to think. However, just what that might involve would likely be somewhat different if each person's perspective were explored.

Likewise, one's notion of what "higher order thinking skills" constitutes would vary in accordance with the philosophical and theoretic perspective held. It would make a difference, for example, whether one is a behaviorist, a developmentalist, a phenomenologist, or of another orientation when determining the likelihood of being able to teach such skills or even perhaps whether it would be desirable to do so. Those who are concerned with objectivity and "truth" as it is viewed in a positivistic sense would have a different standard for "higher order thinking" than would those who are concerned about intersubjectivity, appreciation of ethical dimensions, and actions taken in daily life situations. So instead of dealing with "higher order thinking skills" as a big chunk and getting mired down in a morass of what is meant by that, it is important to "unpack" the concept and deal with some pieces — recognizing that the way they fit together may vary for individuals in much the same way that values in a value system or elements in a cognitive structure might vary.

This would be consistent with much of the writing that is now being put forth in relation to the thinking skills movement. There appears to be a tendency to define more broadly that which is involved in terms such as "critical thinking." For example, Robert Ennis of the University of Illinois, one of the leaders in the study of critical thinking, has recently defined the term as ". . . reasonable reflective thinking that is focused on deciding what to believe and do," (Ennis, 1985a). This statement suggests a more complex conception than his earlier (Ennis, 1962) definition which said critical thinking involved assessment of the reasonableness of statements. Richard Paul, of the Center for Critical Thinking and Moral Critique at Sonoma State University in California, states that as an alternative to understanding critical thinking skills as discrete skills which can be tacked onto other learning and which are extrinsic to the character of a person, i.e. technical in nature, critical thinking skills can be conceptualized as being intrinsic to one's character and to one's understanding of their own cognitive and affective processes. In other words, critical thinking skills can be considered to be emancipatory, in a sense (Paul, 1984, 1985). Another authority, Robert Yinger, says that critical thinking is part of other intellectual activities such as problem solving, decision making, or creative thinking. He stresses that creative and critical aspects are inherent in complex thought; they are not mysterious mental operations, but essential components of everyday thought and deliberation (Yinger, 1980).

With these notions in mind, examining a perspective such as that of the developmentalist, who believes that interaction as social beings is essential for bringing human beings to their

full potential, would entail asking a question like, "What are we capable of on our own?" Infants bring certain predispositions to bear on their interactions with a caregiver. These innately choreographed, reciprocal experiences enable the child to become ever more "in tune" and proficient at bringing about a relationship that helps him or her develop cognitively, socially, and emotionally. The early processes of language development that engages the child in conversation-like exchanges with a caregiver are just the preliminaries — but they give a head start on becoming "logical" and "questioning." These developments continue because the environment allows it and fosters it through the emotional excitement and physical stimulation of play and exploration. These occurrences suggest that people are naturally "thinking" beings.

That is not to say that the child's intellectual processes are mature in an adult sense. Matthew Lipman, formerly Professor of Philosophy at Columbia University, makes the analogy that basic reasoning equipment is rather like a set of tools. There's a difference between an adult's kit and that of a child, because the adult may be better able to cope with complicated problems by structuring his or her reasoning. But the sets of elementary reasoning equipment are fundamentally similar and potentially able to develop if the right kinds of supports are available (Lipman, 1985). Irving Sigel emphasizes that thinking doesn't just emerge and function; it develops under the influence of three conditions which he says are relevant for education; one's developmental level, the personal-social influences in one's life, and the cultural milieu. These influences make a difference in the quality and focus of one's thinking, moving it beyond that which is self-serving and survival-oriented to consciousness about the effects of actions in a societal context.

But what should teachers consider in planning strategies that foster thinking development? Yinger (1980) believes that four factors affect one's ability to think: knowledge and experience, relevant intellectual skills and strategies, attitudes and dispositions, and the thinking environment. He sees them as important because first of all, knowledge and experience are important because they affect one's perceptions, the alternatives that are generated, efficiency, and ability to use information. Second, intellectual skills and strategies are important in a broad sense because they influence how an individual processes and manipulates information. Unlike those who emphasize the use of logic and the scientific approach as the key intellectual skill, Yinger says that comprehension, information seeking, and evaluation are the activities that are foundational. The third factor that, in Yinger's view, affects ability to think is that of attitude. This influences personal choice and action. And finally, the fourth factor is the thinking environment — the context of physical, social, and intellectual forces.

With this context, it would be helpful to look more closely at the kinds of "tools" that might be in one's kit if they are to be a "higher order thinker." These relate to the foundational skills of comprehension, information-seeking and evaluation that Yinger describes. One set of tools that seems particularly appropriate are the reasoning processes involved in analysis and inquiry which Arnold Arons, Professor Emeritus of Physics at the University of Washington has described (Arons, 1985):

1. Being able to ask questions that probe what we know, how we know it, why we accept or believe it, and the credibility of the evidence.
2. Being aware of what **isn't** there — the gaps in our information.
3. Being able to make discriminations between what is seen and what is inferred, what is fact and what is conjecture.
4. Being able to probe words for their meanings so that the ideas can be understood.
5. Being able to ferret out the assumptions behind a line of reasoning.
6. Being able to make inferences from data.
7. Being able to deduct possible outcomes of a particular situation using principles and recognizing constraints.
8. Being able to discriminate between inductive and deductive reasoning.
9. Being able to test one's own line of reasoning for internal consistency.
10. Becoming self conscious about one's own thinking and reasoning processes.

Arons is quick to point out that his list is not exhaustive. Other dimensions might be added. But many things are involved in helping a student deliberately build capabilities for doing these things. Arons says it requires practice, a conscious weaving together of ideas. However, before this happens teachers need to first examine their own knowledge and experiences, intellectual skills and strategies, attitudes and dispositions, and the thinking environment which they encounter.

In conclusion, four propositions which provide teachers something to think **about**, both for themselves and for their students, can help probe the question of "can higher order thinking skills be taught?":

Proposition I: That thinking be legitimized as a worthwhile activity by providing **time** for people to think, **time** for people to explain their ideas, **time** for others to examine them, and **time** to develop and evaluate them.

Proposition II: That thinking be respected and recognized as an act of courage and citizenship that makes a contribution to society.

Proposition III: That different ways of knowing be focused on a problem and people encouraged to work together to develop the strength of their collective ideas.

Proposition IV: That clarity of meaning and coherence of thought be an aim of communication, with individuals coming to understand the importance and power of language to the development of higher order thinking.

Thinking about thinking, the thinking environment, and the values involved may thus provide the meanings that lead to understanding.

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GENDER AS A VARIABLE IN TEACHING THINKING

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Research and related literature on thinking skills has been developing at a rapid rate. Another area in which there has been rapid growth of information is gender differences. Those who see a connection between these two areas have not been altogether ignored but neither have they been heartily welcomed by thinking skills investigators. In my experience, suggesting that gender differences is one of the variables that needs to be considered in the study of thinking skills has resulted in comments like "you don't **really** think that," "isn't that diverting us from the 'real' issues," or "that's more a women's issue than an educational concern." As time has passed, looking at gender as a variable in teaching thinking has become of paramount importance to a few. This paper is a brief attempt to enable some understanding of the relationship between gender and thinking.

Initially it seems imperative to clarify one's intentions in what is perceived by some as a somewhat suspicious effort. The underlying permises on which this paper is based are:

- there are differences in patterns of thought for males and females, differences distinct enough to be characterized as gender differences.
- the majority of females and males tend to exhibit these distinct patterns.
- knowledge of gender differences comes from a sound research base, from authentic inquiry.
- a goal of investigating gender differences in thinking is more effective teaching and learning in home economics classrooms.
- understanding gender differences that have been found to exist is especially important for vocational home economics education because it is affected and those it serves are affected by these differences.

What is definitely **not** being said or implied is that:

- every male and every female adheres to these characteristics.
- female characteristics are better than or worse than male characteristics, or vice versa.

Gray (1982), in her book *Patriarchy as a Conceptual Trap*, identifies the basic problem in trying to look at gender differences and their effects. She maintains that our society is caught in a certain way of thinking, the patriarchal way, and thus our thinking is closed off. Conceptually, we are unable to imagine solutions and ideas which do not meet the accepted patriarchal mode.

The accepted patriarchal mode which binds us is **not** one in which females are valued. Neither is home and family valued. Best's (1983) four years of intensive study of children in an elementary school shows just how early those values are internalized. In Best's study, males in the first grade were beginning to reject housework and were affirmed by their male friends for macho stands against cooking, sewing and taking care of the house. In grade two, the idea was added that girls, (specifically a wife) were supposed to do the housework. "They considered it their birthright to decide not only how they should spend their own time and energies but also how their future wives should. They were, in effect, expressing what an unwritten curriculum had taught them — to look on marriage not as a shared relationship but as one in which a man 'got a wife' to do the work he did not want to do" (p. 80, 81).

This, then, is one illustration of what students bring to the classroom, and of the deeply entrenched thought patterns educators are dealing with and the formidable obstacles that exist in enabling students to think beyond that patriarchal model, to help them break out of the conceptual trap.

What are some of the aspects of that trap which affect thinking? Five specific areas which have been discussed in the literature will be explored.

1. In the patriarchal system, humanness is equated with maleness. Males are allowed to speak more, their ideas are given more credibility in classrooms; more eye contact is made with males than females (up to 10 times as much). So what does that have to do with the development of thinking skills? If, as a female, my ideas are seldom or never recognized as worthwhile, then it becomes more risky to speak. Speaking and not being heard means to constantly lose faith in oneself (Gilligan, 1982). So I lose self esteem. And with low self esteem, my expectations that I can think at a higher level are diminished.

   As a male, if my ideas are not accepted, it is more likely that I will see it as the teacher's problem rather than my own. I blame the teacher. And that sets up a barrier between us which interferes with my listening, with my questioning. Am I going to cooperate with a teacher who obviously does not know good ideas when she hears them?

2. In the patriarchal system, males see themselves as separated from others, as more independent. Females see themselves as connected to others. Gilligan (1982) and her associates were the first to discover this gender difference and there has been considerable work since that confirms the findings (Langdale, 1983; Lyons, 1983). The work of these pioneers has helped us to understand that females and males are different in their moral development. Some years ago, Lawrence Kohlberg postulated six universal stages of moral development. Kohlberg used only males in his research. The research of Gilligan and her associates shows that Kohlberg's stages are far from universal. Not only do they omit half of the population, but they also do not take into account that females have a morality of care, of connectedness.

   So what difference does that make in the classroom? In helping students to develop critical thinking skills? To begin with, critical thinking involves moral reasoning. Moral reasoning means one needs to look at effects on others or to take others into consideration. Male moral reasoning patterns include less consideration of consequences to others than do female patterns. Rather, the focus is on what will happen to me. A concrete example of this can be seen in a teen pregnancy dilemma. Many male teen parents are simply unwilling to be involved in the parent role. They tend to look at the pregnancy in terms of themselves and how it will interfere with their own future. Females, however, agonize over whether to abort, adopt, or keep the baby, considering the consequences to the baby as well as themselves.

   Developing critical or higher order thinking skills means having to consider consequences. Since males tend to do less of this, they are more likely to experience difficulties in role playing, case studies or other contrived situations which require one to empathize, to look at effect on others. As noted above, a question of what the hypothetical teenager, John Smith, should do when his girlfriend becomes pregnant is usually answered in terms of John Smith and not the girlfriend.

3. A considerable amount of research has been done on the actual thinking processes of humans. Left brain/right brain research is a widely known type of study in this area. What has emerged from this inquiry is that females are more relational in their thinking, more emotional and more process oriented than males. Males tend to be more logical, rational thinkers and view things as right or wrong. Females are more "maybe" oriented, tending to hedge before making a decision. Either/or thinking can be an obstacle to learning critical thinking skills because it prohibits a variety of solutions from emerging. If it has to be either/or, then all the possibilities in the middle are ruled out. This may mean that males will want less time to explore alternatives. But exploring alternatives is an essential part of critical thinking ability. Right/wrong or yes/no thinking also allows less investigation of "why" and there needs to be lots of "whys" in developing critical thinking skills.

   Females, with their tendency toward "maybe" and relational thought, are more hesitant in coming to a conclusion and the conclusion is more likely to have a dimension of emotion or feeling rather than pure logic or objectivity.

   This is an area in which it is easy to see how the strengths of males and females could be valuable in helping both to develop critical thinking ability that reflects both emotional and rational aspects.

4. The patriarchal system tends to be more present than future oriented. By future I do not mean five or ten years down the road. In this case, future means consideration of the next generation and the next. Future thinking in this case is "Korzybski thinking" or thinking which places value on behavior which contributes to human survival (Ray, 1970). Practical reasoning requires that we look at persistent, perennial problems or problems that we and future generations will face. A "now" orientation is antithetical to that. Some authors have attributed many of the current world problems, such as depletion of natural resources, overpopulation, and nuclear threat to short term thinking.

5. There are communication conflicts or language barriers related to gender differences (Pearson, 1985). When there are communication barriers, there are barriers to critical thinking. Basic understanding in communication is pre-requisite to thinking. For example, if women attend more to non-verbal communication and use it more than men, a male student could be at a disadvantage with a female teacher who expects males to understand without being given direct information. A female student could be at a disadvantage in having only direct information with no non-verbal clues.

6. Lastly, and perhaps most significant to this discussion, is the idea that perhaps the whole construct of critical thinking needs to be re-examined and re-defined. Our current concepts are closely tied to the patriarchal paradigm. Tests most frequently used in research to measure critical thinking ability are constructed around male modes of thinking, the logical-rational model. Recent studies show that model is less used by females. Are we making the same mistake Kohlberg did in his moral development research? Are these tests gender fair? Do we need new tests that utilize both female and male thinking characteristics as a basis of measurement?

These aspects of gender differences are just a brief glimpse of some of the findings of the research on gender differences. It is hoped that it's enough of a glimpse to show that there are often at least two different paths that need to be considered as we investigate the development of critical thinking skills. Langdale (1983) has noted that "by providing a model of development that includes two developmental paths, differences found no longer need to be aligned as more or less, higher or lower, better or worse. Rather, such differences can be simply, different" (p. 268). The suggestion here is that we celebrate the differences, maximize them and learn from each other so that our own thinking abilities and our teaching of thinking can be enhanced.

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THE ROLE OF LISTENING, READING AND WRITING SKILLS IN HIGHER ORDER THINKING: IMPLICATIONS FOR HOME ECONOMICS INSTRUCTION

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Listening to the instructor lecture, reading home economics material, and writing papers for evaluation purposes have all been student activities basic to home economics curriculum for many years. Why am I discussing what to many appears to be a tried and true subject? It's because of the many myths that surround these skills.

Myth No. 1: As long as students have ears and a pencil, they can gather information from a teacher's lecture.

Myth No. 2: Students that read well can comprehend the material presented.

Myth No. 3: Writing consists of gathering quantities of information to be checked by the teacher.

The skills of listening, reading and writing go far beyond these superficial myths to include the development of higher order thinking, such as interpretation, integration, inferring, analyzing and composing.

Preservice home economics teachers are concerned about the most effective way to teach their subject matter. Are listening, reading and writing skills separated from the teaching of subject matter areas? No, they are not. These basic skills can be incorporated in the home economics program along with the subject matter to greatly enhance the learning experience. Because students will become more active thinkers during the process of using these skills in the classroom, preservice teachers need information on the specific teaching methods needed, problems they may encounter using the process and explanations on how they can integrate the skills into home economics subject matter areas. This article will explore the roles of listening, reading and writing separately in order to better understand their intrinsic benefits in stimulating higher order thinking, and then integrate these skills into a teaching plan that could be utilized in a preservice home economics teacher education program.

The Role of Listening

According to a study of classroom instruction, nearly 60% of the information students receive comes through listening (Devine, 1982). Too many times educators assume students are listening simply because the educator is talking. Listening instruction has been neglected in the schools because it is difficult to characterize and define. "Listening means too many things to too many people" (Devine, 1982). Listening can become totally passive as evidenced by the zombie-like way some children and adults attend to their television sets. People pay attention to their television, but listening is more than simple attentive behavior. Active listening involves critical analysis of what is being said. Because professional persuaders are able to shape public opinion without the listener being aware of the situation, their messages must be converted to meaning with the mind and analyzed for content. Educators expect students to analyze the subject matter the educator presents. How can this be accomplished? By helping students to "think along"

with the educator as he or she is speaking (Devine, 1982). High school and college students who listen well to lectures are thinking along the same lines as the instructor (Moffett, 1968). The students are not simply absorbing information, but looking for main points, inferring meanings and picturing examples in their mind as the lecture progresses.

Contemporary reading theory emphasizes the importance of students' experience in building comprehension. The theory separates the reading process into three parts (pre-reading, reading and post-reading). It seems that the same type of construct is appropriate for listening activities. Perhaps the most neglected aspect is the preliminary stage.

Guided practice BEFORE having to perform can improve students' ability to listen. For instance, students can be prepared for resource persons by listening to practice tapes for specifics such as main points, sequencing of thoughts or transitions. After listening to the tapes, students can jot down their ideas and then compare notes about how main points were emphasized or what cues the speaker gave prior to making transitions. Later, learners might practice "listening between the lines" or drawing inferences about a speaker's bias or unstated assumptions.

Helping students to sequence important details in their mind can be done through outlining or a visual "map" identifying main ideas and subordinate points. There is no doubt listening with "pen in hand" aids students to remember (Devine, 1982). Spoken material is sorted and categorized by the student before it is jotted down. These are just a few of the pre-listening methods to encourage active listening while building higher order thinking skills in students.

The Role of Reading

Reading and writing skills are difficult to separate. Even listening skills call for a certain amount of writing to organize ideas. Reading skills will be isolated briefly in order to describe their importance in generating thinking and to explain various pre-reading activities.

Reading is more than literal comprehension (Sanacore, 1985). It is also more than retrieving facts and details to answer a study guide. Reading for comprehension involves complex mental processing of information. For example, when people study a brochure detailing what programs are available at a conference, they typically skim to find areas of interest. They want to find something new, add to prior information or explore familiar territory. From reading the information about a presentation, they make certain inferences about what they will see, hear and how they might utilize the material. In short, they have to think about the information they read about before they make the decision to attend.

Smith has written that, "Reading comprehension involves thought making as well as thought getting" (Beyer, 1971). This process consists of translation, interpretation and application. Ideas are compared, questions of relevance and other points are raised, bias is checked, assumptions are evaluated and meanings are inferred.

To make reading effective, the student must again, as in listening, "think along with the author." According to Moffett (1968), if fluent readers cannot grasp the idea or make inferences from what they are studying, it is because they have a thinking problem, not a reading problem. How can we aid students to think along with the subject area we are teaching in their reading assignments? First, we need to determine what the students already know — or don't know — about a particular subject. Students can be encouraged to recall experiences through activities such as brainstorming, quick writes, small group discussions, to name a few. Then, we can make some decisions about how to relate the known to the new material to be presented. If students have inaccurate or distorted perceptions about a topic, their experience base will have to be expanded before comprehension can be attained. Otherwise they will be just memorizing others' words rather than comprehending ideas. The key to comprehension is to make the unfamiliar familiar.

Strategies can be introduced to aid the learner in comprehending the reading material. Students can skim the main headings of the chapter, look at diagrams or pictures and then make up some questions about what they THINK they might be learning. This self generation of questions facilitates comprehension and encourages students to pause frequently and think about

whether, for instance, they know main characters or events, if they are grasping the concept, if they can relate it to what they already know, if they can give other examples, and whether they can use the main idea to explain other ideas or predict what may come next.

After reading an article, students could talk about the author's ideas and then describe to each other how they came to understand the ideas. By verbalizing the steps and sequences involved in their thinking, students are better able to see gaps and strengths in their own and others' thinking. Causing students to express what goes on inside their heads while they are thinking helps them gain diverse ideas which in turn promotes the discovery of new insights. This cyclical pattern is a growth experience and leads to the development of higher order thinking skills.

As can be noted from this discussion, the whole process of reading is much more active and constructive than educators previously thought. Good readers compose meanings and revise meanings as they gain information (Pearson, 1985). These mental operations are very similar to those used in listening and in writing.

The Role of Writing

As we all know, the basic skill of writing has undergone vast changes in the past few years. We now view writing not merely as an academic skill but as a process with potential for furthering thinking/learning abilities — a process which enables learners to examine abstractions in depth and with breadth.

The writing process (prewriting, writing and rewriting) gradually moves the writer through "warm-up" activities such as interviewing, observing, then to an initial draft, culminating eventually in a finished draft. First, learners collect information on a topic, generate and connect ideas, and reflect on the proposed plan. Then they get down to the actual writing of the components. This draft is written to discover what the learners know, to spark more ideas, and to provide a base for further thinking, studying, and writing. Finally, with assistance from their instructor and peers, they rewrite or revise the plan, adding clarity and depth.

While many educators are finding their students are completing well written projects, they still tend to limit the use of writing to more formal papers. Writing can be equally effective with short projects including journal writing and quick writes. Through the use of quick writes, for instance, students can be asked to summarize the main ideas presented in class, show relationships between two concepts or express feelings about an issue. Such papers are written in short periods of time, getting ideas down on paper to find out what students know and what they do not know.

The combination of these short term activities and the writing process strengthens and reinforces learning by increasing retention and developing discrete mental operations. Writing is one of few ways of coming to grips with meaning. When learners put fragmented ideas into words and a structure, they then come to know those ideas more fully and completely. In short, writing is an emotional and creative experience as well as an intellectual exercise. More important, writing activities give learners an opportunity to think about their thinking, why they came to hold these ideas, and relate concepts to daily experiences in contrast to filling their papers and heads with facts which are quickly forgotten.

Conclusion

The methods used to stimulate listening, reading and writing in subject matter areas have many features in common. Teachers determine what learners know and do not know and then begin to fill in the gaps. Students talk to each other in order to construct and reconstruct ideas. Students are encouraged to look for meanings, not to memorize facts. Questioning stimulates comprehension and inferring helps to integrate information. Thus, learning is active, not passive.

Though these three basic skills were discussed separately, they can be fully integrated into a structured program to help students use their thinking skills in home economics teacher education subject matter as illustrated in the following materials.

Illustrative Instructional Materials

The following plan was developed to incorporate listening, reading and writing skills into home economics teacher education subject matter.

Objectives:

- To compare one's personal philosophy with the philosophies of professional home economics educators.
- To develop a philosophy of home economics education based on past experiences, observations, resource persons, professional readings and one's own philosophy of life.

1. Each student will write for 3-5 minutes on the following question: "What beliefs, feelings or experiences prompted you to enter the field of home economics education?"
2. Students will exchange papers and write for 3-5 minutes, responding to each other's statements (responses might relate to the need for clarification, completeness, use of examples . . .)
3. Students will return papers to original owners and write on the following question: "In what ways have your beliefs, feelings, or experiences changed since you entered the field of home economics education?"
4. Repeat exchange step with a new person.
5. The teacher will then lead a sharing session regarding existing beliefs, feelings or experiences about home economics education.

Pre-Listening Activity

1. Speakers are likely to use key phrases while talking. What are some ways a person might emphasize a key phrase? ("the point is," "this is important," "here it is" . . .) What are some key phrases I have used today (or in the past few days)?
2. Often, reactions to people are based on first impressions, not on what they say. What are some factors that influence first impressions? (appearance, articulation . . .) What else catches your attention when first meeting someone? What seems to catch your attention when you are listening to a speaker?
3. Listening to speakers involves "reading between the lines" for personal bias. How are biases indicated? (use of strong language, emotionally-laden words, over-generalizations. . .) What are some of my personal biases? How do you know I indicate these biases?

Active Listening

Three to five resource persons will discuss their philosophies of home economics education. Learners will complete the following listening guide for each resource person:

1. How does the resource person's beliefs compare with your beliefs?
2. What does the resource person believe about home economics education?
3. How does this person's beliefs influence their teaching?
4. What factors have influenced their beliefs and practices?
5. Did you notice any personal biases? If so, how were they indicated?
6. What conclusions can you make about this teacher's philosophy?

Pre-Reading Activities

Students are to make comparisons between their experiences and the ideas described in the readings.

Possible pre-reading activities:

1. Teacher selects a main concept embedded in the article and explores, through discussion, the learners' base of experience with the concept.
2. Students skim the article for headings, pictures, diagrams and quotes and write three questions about what content they think might be in the article.
3. Teacher prepares and distributes a list of possible unfamiliar vocabulary words. Students will develop a definition of those words as they are reading.

Reading

Students actually read the article.

Post-Reading Activities

1. Students make associations between initial pre-reading discussion and what was read.
2. Students list the author's main ideas.
3. Students discuss biases in the reading.
4. Students quickly write what they learned from the article.
5. Students indicate how ideas about learners and home economics education have changed after reading the article.

Writing Activities

Prewriting Activity #1: Chart

Students are to place the data collected in the appropriate cells.

	Resource Person #1	Resource Person #2	Resource Person #3	Resource Person #4
Key ideas about first impression of this teacher				
Unique key phrases in regard to learners				
Unique key phrases in regard to home economics subject matter				
Unique key phrases about home economics education				
Your conclusion about this teacher's philosophy				

Prewriting Activity #2: Analysis of chart

Students are to analyze chart by answering the following questions:

1. What variations do you note between the teachers' philosophies?
2. In what ways do the philosophies appear to be similar?
3. In what ways have your ideas about learners and home economics education changed after hearing from these resource persons?
4. Describe the external influences that have helped to shape these teachers' philosophies.
5. In what ways will these teachers' philosophies influence learners now and in the future?

Prewriting Activity #3:

Each student is to review a peer's chart and accompanying analysis and respond to the questions below:

Name of reviewer:

Name of reviewee:

1. Two new ideas that occurred to me after reading my peers' chart and analysis were:

2. One idea that is not clearly explained is:

3. My suggestion for clarifying the above idea would be:

Culminating Writing Assignment: A Personal Philosophy of Home Economics Education

After having examined your past experiences, made observations, heard resource persons, read professional literature and thought about your own philosophy of life, please write, using your own words, your philosophy of home economics education. (As you develop your philosophy, you may want to refer back to our class activities.) Consider learners, home economics subject matter, education, needs of the family, your own personality, and other contributing factors.

Criteria:

1. clarity
2. completeness
3. consistency
4. use of examples
5. peer review

Final Peer Review:

Read your peer's rough draft and answer the following questions:

Name of reviewer:

Name of reviewee:

1. What do you like best about your peer's philosophy?

2. In what ways could the philosophy be strengthened to meet the criteria of the assignment?

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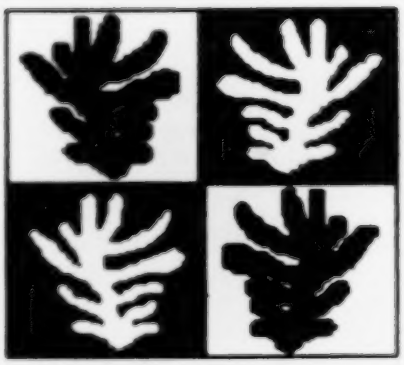

THE ROLE OF THE FUTURE HOMEMAKERS OF AMERICA STUDENT ORGANIZATION IN FACILITATING THE DEVELOPMENT OF CRITICAL THINKING SKILLS

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Since its formation just over 40 years ago, the Future Homemakers of America (FHA) student organization has been meant to be an integral, or co-curricular, part of vocational home economics education. One of the primary contributions of Future Homemakers of America is its ability to extend opportunities for students to "assume active roles in society in areas of personal growth, family life, vocational preparation and community involvement" (*Future Homemakers of America*, 1982, p. viii). The organization also provides opportunities for students to develop citizenship and leadership skills, enhance the relevance of their studies to the world of work and to family life, and ease the transition from school to adult work and family roles. The National Advisory Council on Vocational Education noted in its 1984 report that vocational student organizations are a critical aspect of the equation for excellence in vocational education programs.

While the values of FHA are widely recognized, one contribution that has not been highlighted substantially is the role of the organization in facilitating the development of critical thinking skills. FHA has historically provided a rich climate for members to develop the critical thinking skills, as well as the attitude and behavior patterns, that are associated with successful functioning in both work and family roles.

Components of Critical Thinking

A traditional view of critical thinking skills consists of the upper levels of Bloom's taxonomy of educational objectives (i.e., analysis, synthesis, and evaluation) (Skinner, 1976). This view has recently been criticized (e.g., Richard Paul, 1985). Today, much research in the area of critical thinking seems to be coming from the information processing view of what constitutes intelligence, and what is involved in **rationally** deciding what to do or believe. This is in contrast to psychometric and developmental views of intelligence which have also received attention (Feely, 1976). Robert Ennis (1980, 1981, 1985) has defined critical thinking as "reasonable reflective thinking that is focused on deciding what to believe and do."

Research within the information processing perspective has shown that there are at least three requirements or prerequisites for making rational decisions about what to do or believe (Laster, 1985; Norris, 1985):

1. **Extensive/accessible knowledge**

   Knowledge includes facts, principles, abstractions, and procedures clustered in big conceptual categories. Critical thinking requires a subject-matter base and seems to be taught most effectively when there are real world opportunities to apply knowledge.

2. **Cognitive Skills**

   These include both metacognitive (executive) and nonexecutive thinking skills. Key metacognitive skills are:

   Planning — recognizing and defining the nature of a problem, choosing processes needed to solve the problem, and sequencing operations in an overall strategy.

   Representation — deciding how to organize and interpret information related to the problem.

   Self-monitoring — recognizing achievement of sub-goals; anticipating errors; identifying and correcting errors when they occur; choosing strategies to avoid errors; assessing appropriateness of outcomes/results; recognizing and capitalizing on one's personal learning style(s).

   Nonexecutive thinking skills include hundreds of sub-tasks that are popularly included in thinking skills curricula such as Seascape (Barnes, Wenck, Burgdorf & Bell, 1978) and Structure of the Intellect (Meeker, 1969) and in tests of critical thinking such as the Cornell Critical Thinking Tests (Ennis & Mellman, 1985), the New Jersey Test of Reasoning Skills (Shipman, 1983) or the Watson-Glaser Critical Thinking Appraisal (Watson & Glaser, 1980). Examples include classifying, comparing and contrasting, discriminating between fact and opinion, generating and testing hypotheses, and using inductive and deductive reasoning. Expert-novice analyses have indicated the metacognitive skills may be more important than the others in intelligent problem solving (Larkin, McDermott, Simon & Simon, 1980; Laster, 1985; Norris, 1985; Simon, 1980; Wagner & Sternberg, 1984).

3. **Disposition to think Productively and Critically**

   This is the "critical spirit"; the ability and inclination to try to make ethically and intellectually defensible decisions, to search for multiple meanings, to look for alternatives and take another person's perspective; and to overcome the typical childhood tendency to be egocentric (Inhelder & Piaget, 1958; Selman, 1980).

Questions of special interest for FHA are:

1. How can the organization help members expand their knowledge base or build conceptual complexity as a base for critical thinking?
2. How can FHA help build both metacognitive and nonexecutive thinking skills?
3. How can FHA enhance the critical spirit; the disposition to want to make the best (most defensible) decisions, and take the best actions possible?

According to Brown and Paolucci's conceptualization, home economics is concerned particularly about three kinds of actions family members take: 1) **technical or instrumental** (satisfying physical and aesthetic needs), 2) **communicative** (promoting mutual understanding within the family and outside world), and 3) **emancipative** (evaluating conditions in families and society that affect both, making value decisions based on ethical considerations, and being proactive in shaping work and family styles).

The FHA Climate for Critical Thinking

The literature contains mixed recommendations for facilitating development of the components of critical thinking. However, it is fairly typical to see these suggestions:

1. Devote conscious attention to thinking
2. Teach thinking skills directly
3. Provide opportunities for interaction through cooperative learning and discussion.

The FHA organization has historically provided an ideal climate for acting on these suggestions, particularly the third. The philosophy of cooperation and cooperative learning has formed the foundation of FHA since its inception, and is still emphasized, although competitive and individualistic goal structures are also recognized as valuable vehicles for certain types of learning. Today, the national organization, recommends using a blend of 80% cooperative, 10% competitive, and 10% individualized activities (Olcott & Osborn, 1985; *Future Homemakers of America*, 1982). These recommendations were based on Johnson and Johnson's research concerning the outcomes of cooperative group learning (Johnson & Johnson, 1975, p. 14; Johnson & Johnson, 1985, pp. 56-57). They have found that cooperative learning facilitates:

1. Greater retention of factual information
2. Greater elaborative and integrative thinking (formation, expansion, and application of conceptual knowledge)
3. Development of higher level thinking abilities
4. More positive attitudes toward the subject being studied and greater motivation to continue learning in the area
5. Greater group cohesion, identification with learning partners, and acceptance of individual differences
6. Greater acceptance of responsibility for one's own learning.

FHA Strategies that Facilitate Critical Thinking

Some strategies are being used and might be used with FHA to facilitate development of the requisites for critical thinking: An extensive knowledge base, cognitive skills, and the critical spirit.

Expanding the knowledge base/building conceptual complexity

Research has shown that knowledge is more easily retrieved when clustered in large conceptual categories and integrated with previous understandings (Laster, 1985, p. 12). Further, active cognitive processing of information facilitates its acquisition and storage in large categories. Information acquisition, and its storage in large categories seem to occur most easily when:

- the information is presented and analyzed in vivid ways, such as in face-to-face interactions, real life experiences, and case examples involving oral summarization and discussion with others (Johnson & Johnson, 1985, p. 54).
- Learners are involved in teaching each other ways of thinking about problem situations (Johnson & Johnson, 1985). The old adage that the best way to learn something is to teach it to another has been borne out in research. People organize knowledge in much more complex and efficient ways when they are learning to teach others (Allen, 1976; Annis, 1983; Gartner, Kohler, & Reissman, 1971; Murray, 1983).
- Learners are held accountable for their own learning and provide support and assistance to others when needed (Johnson & Johnson, 1975, 1983; Johnson, Johnson, & Maruyama, 1983; Johnson, Maruyama, Johnson, Nelson, & Skon, 1981).
- Learners have ample opportunities to take opposing stances on issues, explore differences in opinions and information, and examine relationships between qualitative and quantitative information (Johnson, 1979; Johnson & Johnson, 1979, Johnson & Johnson, 1984).

Peer education projects such as those suggested in the FHA resources, *The Student Body* (1985) and *Families and Futures* (1982), are excellent strategies for promoting active cognitive processing of information. Some examples are:

- A chapter may choose to become involved in researching media messages that may relate to food-related behavior, family relationships, consumer behavior, images of male and female roles, work attitudes or career choices (*Families and Futures*, 1982, p. 22; Way, 1983) and design a school or community project to create awareness of the content of these messages and hypothesized impact on individuals and families.
- Chapter members may choose to focus on food-related responsibilities from different perspectives: individual, family, national, international. They might choose to seek information about problems of malnutrition in the U.S., problems in the world food supply and alternative food sources, and explore differences in opinions and information. They might choose to research food waste in their homes, school and/or community and then design a project to create awareness of the issues and promote changes they perceive are needed (*Feed, Need, and Greed*, 1980; Johnson & Johnson, 1985).

Peer education projects involving inquiry, academic controversy, and cooperative learning could be designed to relate to any area of home economics education (see Johnson, 1979; Johnson & Johnson, 1979, Johnson & Johnson, 1984). However, to ensure they build conceptual complexity, FHA members need opportunities to take responsibility for their own learning; carry out their own inquiry; identify, discuss, and summarize multiple facts and opinions; and design and carry out their own peer education strategies.

A number of models of teaching (Joyce & Well,, 1980; Joyce, 1985) have been developed that stress group interaction and assist learners with the inquiry process. They are as appropriate for informal educational settings as formal settings, and might be used by FHA members in defining and/or implementing peer education projects. FHA members may have learned about these models in their home economics classes, or they may choose to learn about them as an FHA activity. Included are (Joyce & Weil, 1980): Herbert Thelen's group investigation model which emphasizes academic inquiry, the construction of knowledge, and social process learning (pp. 226-240); Fannie and George Shaftels' role playing model that is designed to help learners study personal values and clarify their positions (pp. 241-259); Donald Oliver's jurisprudential inquiry model that provides a framework for analyzing social issues and emphasizes understanding others' perspectives or roles (pp. 260-276); and Massialas and Cox's social inquiry model which stresses inquiry into social life but emphasizes commitment to solving social problems and the tentative nature of knowledge.

Building Metacognitive (Executive) and Nonexecutive Thinking Skills

Planning, representation, and self-monitoring are recognized metacognitive, or executive, thinking skills. These skills are believed to be especially important in the process of rationally deciding what to do and believe as family members, citizens, and workers.

The FHA Planning Process provides an ideal framework for helping members build metacognitive skills. The steps of the Planning Process are: 1) identify concerns, 2) set a goal, 3) form a plan, 4) act, and 5) follow up (*Future Homemakers of America*, 1982, pp. 24-30).

To focus on building metacognitive skills when using the process, the following strategies in each step might be useful:

1. **Identify Concerns** — focus on perennial re-occurring concerns of families, work, and/or work/family relations (Brown, 1980, pp. 56-82) and consider multiple ways of representing concerns. For example, one might consdier representing teen pregnancy concerns from the personal, family, social, economic, religious, ethnic, and/or historical perspectives. One might also consider representing these concerns in terms of types of knowledge: theoretical, technical, and/or practical ("The Use of Knowledge," 1980).
2. **Set a Goal** — consider the contexts of suggested goals to assess their possible impact/appropriateness for society as well as self and family; identify sub-goals or milestones for goals formulated.

3. **Form a Plan** — identify and weigh alternative strategies, including operational sequences for achieving sub-goals and goals; anticipate possible stumbling blocks and strategies for avoiding them; identify knowledge, skills, abilities, and other resources needed to take action, and strategies for securing them; identify and capitalize on preferred learning styles (Laster, 1985, p. 16). With respect to learning styles, it may be appropriate to focus on cognitive, affective, and/or physiological dimensions of learning style.
4. **Act** — consciously monitor progress in terms of sub-goals and strategies selected; anticipate new barriers to successful outcomes; continuously assess need for changes in goals and plans, and make needed changes.
5. **Follow-up** — reflect on the action in terms of outcomes, but also in terms of a) degree to which the concern/problem was adequately represented, b) appropriateness of goals and sub-goals selected, and c) appropriateness of planned strategies and effectiveness of any strategy modifications made.

Besides these suggestions for building metacognitive skills while using the Planning Process to identify and carry out content-related projects, FHA members and advisors may find it helpful to try other more direct strategies in building metacognitive skills. These might include undertaking peer education projects that involve teaching others about the components of metacognition, investigating the use of metacognitive thinking skills in fulfilling various work and family roles, and/or informing others about the role of metacognition in home economics education. One program for teaching metacognitive skills that may be helpful is *Philosophy for Children* (Lipman, Sharp, & Oscanyan, 1980; Lipman, 1984).

FHA also provides an ideal climate for helping members build nonexecutive thinking skills. Lists of these skills are plentiful (e.g., Ennis, 1967, 1980; Morante & Wesky, 1984) as are curriculum guides to help develop them (e.g., Barnes et al., 1978; DeBono, 1983; Feuerstein, Rand, Hoffman & Miller, 1980; Meeker, 1969; Seiger-Ehrenberg, 1982). Members may wish to identify and study these skills themselves and/or incorporate them in peer education projects that are designed and implemented.[1]

For example, students may wish to focus on:

- building hypotheses
- developing criteria
- discriminating between definition and example, and fact and opinion
- judging relevance of information
- recognizing false analogies and slanted arguments
- testing generalizations
- outlining and summarizing

These and many other nonexecutive thinking skills could be appropriately addressed in most FHA projects.

Thinking skills curriculum guides provide one resource that is available to FHA members and advisors for stressing nonexecutive thinking skills. Formal models of teaching are another. Among these models included in Joyce and Weil's *Models of Teaching* (1980) are: Jerome Bruner's concept attainment model (pp. 2-46) and Hilda Taba's inductive thinking model (pp. 47-60) which both focus on the inductive reasoning process; Richard Suchman's inquiry training model (pp. 61-74) that helps learners organize data, examine cause and effect relationships, and build and test theories; and David Ausubel's advance organizer model (pp. 74-93) which is designed to strengthen cognitive organization in a deductive fashion.

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[1]For an excellent overview of curriculum materials designed to teach various kinds of thinking skills, see Nickerson, 1984.

Building the "Critical Spirit"

The relationship between affect and cognition has long been recognized. John Dewey, for example, wrote in 1933 (pp. 29 and 34):

> "Ability to train thought is not achieved merely by knowledge of the best forms of thought . . . Moreover, there are no sets of exercises in correct thinking whose repeated performance will cause one to be a good thinker. The information and the exercises are both of value. But no individual realizes their value except as he is personally animated by certain dominant attitudes in his own character.
>
> . . . If we were compelled to make a choice between these personal attitudes (open-mindedness, wholehearted interest, responsibility in facing consequences) and knowledge about the privileges of logical reasoning . . . we should decide for the former. Fortunately, no such choice has to be made because there is no opposition between personal attitudes and logical processes . . . what is needed is to weave them into unity."

Richard Paul (1982, 1984), current director of the Center for Critical Thinking and Moral Critique at Sonoma State University, underscores the importance of affective processes in his differentiation between critical thinking in the "strong" and "weak" senses. In the weak sense, critical thinking consists of the development only of technical reasoning skills. In the strong sense, it consists of the development of emancipatory reasoning skills; those that generate insight into one's own affective and cognitive processes that produce openness to and comfortableness with dialectical analysis (the weighing and reconciling of contradictory arguments and views through dialogue, discussion, and debate).

It seems obvious that providing a climate within which the "critical spirit" can develop is entirely consistent with the goals of the FHA organization. Time and again, in FHA resource materials we see such statements as (*Future Homemakers of America*, 1982):

> "youth can think and act seriously and responsibly if given the chance" (p. ix)
>
> "youth must be involved in decisions that affect them" (p. ix)
>
> "we have the ability to determine the quality of our lives for we have energy, imagination and courage" (p. xi).

The climate exists within FHA for the healthy development of the critical spirit. Advisors can maintain and strengthen this climate in a variety of ways. Among these are (Glaser, 1985; Paul, 1984; Sabini & Silver, 1985):

1. Facilitating as much focus on long-term family and societal issues as on shorter-term technical issues and problems; or giving as much attention to idea-centered projects as to skill-centered projects.
2. Encouraging respectful weighing of unorthodox and conflicting points of view.
3. Discouraging hasty decision-making based upon limited knowledge, or on only one kind of knowledge (e.g., theoretical or technical).
4. Reinforcing careful listening, cooperative building of ideas, and respect for different ways of expressing them.
5. Encouraging reliance on self as well as experts to construct knowledge and make judgments about what to do or believe.

Future Homemakers of America has much to offer students in home economics education. However, it may be time to make that more broadly known in more specific ways. One specific contribution the organization can and is making on behalf of families and workers is facilitating the development of critical thinking skills. This contribution is but one more reason for:

- teacher educators to prepare future FHA advisors,
- home economics teachers to form, maintain, and expand FHA and HERO chapters,
- students to participate in FHA activities, and
- administrators to support home economics education.

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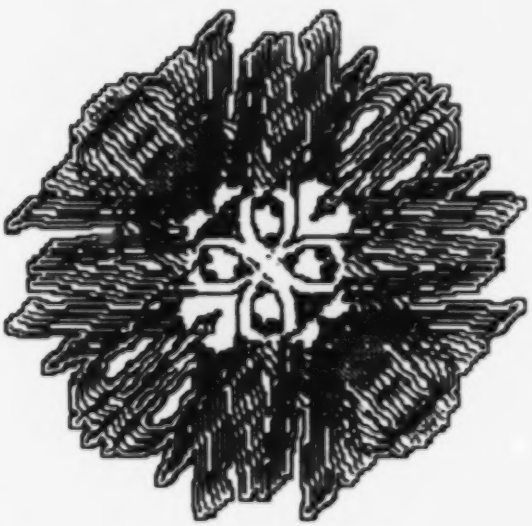

CRITICAL THINKING: PHENOMENOLOGICAL AND CRITICAL FOUNDATIONS

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I have come to a point in my thinking about the way in which critical thinking is conceptualized and taught that is reminiscent of a prior struggle experienced in the educational community regarding the teaching of concepts. Just as concepts are not concrete entities (things) that can be literally handed from one person to the next, neither is critical thinking a "thing" that can be transmitted in like fashion. Yet, inasmuch as it is recognized that concepts are derived from a person's efforts to organize their experience and knowledge, the recognition seems to have gone astray with respect to those who view critical thinking as lists of skills, with little or no indication as to their source or basis in reality. How is it that we fail to recognize the same grounding in experience as essential to critical thinking, when it is how we find ourself in the world and in our relations with others that gives rise to our thinking? Maybe it is that we have not yet recognized the essence of critical thinking (what it truly is or its basic nature) because we have been too busy laying out ready made constructs as the appropriate terminology or the definition or taxonomy. We would do well to heed Heidegger's (1977) warning, wherein he says, we must "keep from hastily recasting the language of the thinker in the coin of terminology, immediately repeating some new and impressive word, instead of devoting all our efforts to thinking through what has been said" (p. xx). Just as Heidegger says "the essence of technology is by no means anything technological" (p. 4), I would suggest that the essence of critical thinking is by no means critical thinking skills. To understand this comparison, it is necessary to see what Heidegger means by such a claim.

Finding the Essence of Critical Thinking by Developing a Free Relationship to It Through Alternative Paradigms

Heidegger (1977) says that we will never experience the essence of technology as long as we only push forth the technological. When we give instrumental definitions of technology we seek to give a "correct fix" to its meaning, but in so doing we do not yet uncover the true. "Only the true brings us into a free relationship with that which concerns us out of its essence," (p. 6). If we are concerned, then, with the essence of something, we would seek to find ways in which it can be brought forth or revealed, rather than "fixing" it in the instrumental sense of definition. In what manner, then, do we bring about a free relationship to critical thinking so as to reveal its essence rather than reducing it to a prespecifiable list of skills? What becomes obvious is that we must turn to other sources of knowledge (paradigm views or ways of viewing the world) other than the technological as translated through models in educational psychology. Such a turning to other "lenses" invokes an analogy with "vision" as if thinking were akin to the act of "seeing" (Belth, 1977). Thinking, then, gives us eyes that allow us to look through different windows on the world. Through these different lenses we can begin to be released from how Heidegger says we are "trapped and blinded by a mode of thought that insists on grasping reality through imposed conceptual structures," (p. xvi).

The lenses I would call for to look at critical thinking are to be found by turning to phenomenological and critical foundations, and in that turning, I then situate critical thinking in the context of a critical and phenomenological perspective. Essential to this foundation for critical

thinking are the lived experiences of persons and the personal connections that are made as social contradictions are exposed. By maintaining a perspective on the lived experience, we are able to examine the structures which have given meaning to our way of being in the world. It calls for a relearning of the way in which we look at the world by reawakening our basic experience of it. The critical intent of such a perspective is that the purpose to which this way of thinking leads, is to empower persons by enabling them to expose distortions in understanding or oppressive conditions in society that favor some interests of groups or persons at the expense of others. It is that very interest in emancipatory ends as the goal of critical thinking that the psychological models of thinking fail to acknowledge or address.

Glaser (1985) suggests, "accurate thinking, uninformed by ethical orientation and moral purpose, does not contribute to a generally superior level of education in our society and to optimally constructive use of our reasoning ability" (p. 24). Richard Paul (1984) contrasts two fundamentally different conceptions of critical thinking that display the absence and presence of an ethical orientation, "weak sense" and "strong sense" critical thinking. Thinking in the weak sense (as a set of micro logical skills extrinsic to the person) fosters technical reason (procedural knowledge) with no concern for transformation of the person in relation to the development of ethical values. Strong sense thinking, on the other hand (integrated macro logical skills intrinsic to the person) generates emancipatory reason (principled thinking, with a concern for the development of a free, rational and autonomous mind and society). Without the ability to reason in the emancipatory sense, or dialectically in the movement back and forth between opposing points of view, Paul says students are "intellectually, emotionally, and morally incomplete" (p. 4). As we seek to develop the intellectual and ethical intent of critical thinking, Sydelle Seiger-Ehrenberg (1985) offers a conceptual clarification:

> "Intelligent," in effect, means using rational thought processes to arrive at a decision to act (or not act). It does not imply "unfeeling" or "uncreative," nor does it exclude the use of intuition . . . "Ethical" means taking into account, when deciding or acting, the well-being of those involved and making a commitment to take courses of action that are likely to contribute to (or at least will not detract from) the well-being of those affected and their opportunity to take intelligent, ethical action (p. 8-9).

In a sense, psychological models serve to obscure the ethical dimension or distortions we seek to expose by playing host to the oppressor: technical rationality in the interest of remaining value neutral. Catherine Cornbleth (1985) offers an insightful metaphorical description of critical thinking that displays a similar concern:

> Critical thinking is like the upper reaches of a rugged, towering mountain covered with snow and shrouded in mist. It is a goal to which many aspire although few have glimpsed the peak even from a distance, because of the snow and mist and the difficulty of the ascent. Yet, there are many stories about that mountain peak, stories that are passed on and embellished from one generation to the next. The stories are enjoyed and accepted, despite discrepancies among them. For many people in the valley, the stories have become the mountain peak. They are content. They no longer question or seek to find out for themselves (p. 2).

Cornbleth's concern is that the stories or conventional wisdom about critical thinking, much like the snow and mist that cover the mountain, have served to cover critical thinking as they obscure and mislead rather than illuminate. How, then, do we begin to clear away the mist so that approaches to critical thinking restore and illuminate the emancipatory ends rather than avoid them by focusing on the "skills" of critical thinking only? Varying the lenses from a singular approach of cognitive psychology to ones involving critical philosophy might offer the potential for such illumination. Where thinking as a cognitive activity alone might become static, through habitual procedures, thinking as a social activity remains dynamic because it is always in the process of being constructed (Hultgren, Boettner, Johnson, Kowalczyk, Roe, & Stark, 1986). When we problematize that knowledge (question its assumptions) as is the intent of critical social theory, we provide a way of access to "uncovering" critical thinking rather than defining it. To learn what something is we must "be" in it and not only talk about it or define it. To remain true to the idea of "being in" critical thinking, rather than merely talking about it or defining it, I would like to illustrate how I have attempted to "vary the lenses" in a graduate course I teach on critical thinking, wherein my perspective is that of a phenomenological critical orientation.

My Critical and Phenomenological Perspective for Teaching Thinking

We come to know that it means to think when we ourselves try to think, and we come to know that it means to teach for thinking when we ourselves try to teach in such a way. This was the goal for the course: to engage us as a class both in thinking about the concept of thinking and practicing what we learned together about thinking through the doing of it. As is described in a forthcoming article (Hultgren, 1986, in press), the framework for the course was to examine the nature of critical thinking as it relates to a critical perspective in general and home economics in particular, where the intent is to expose oppressive conditions in society and family in the interest of emancipatory goals. Essential to this way of knowing is the practice of critique, a form of critical self reflection that seeks to correct distorted meanings, informed through an interpretive process of dialogue and reflection. Understanding is made possible through shared meanings as we examine how we have come to hold the meanings that we have. Ira Shor's (1980) *Critical Teaching and Everyday Life* helped develop this framework.

The Critical Intent in the Context of Lived Experience

The theory behind Shor's liberatory pedagogy (empowering animation of critical consciousness through the students' object-subject switch in an egalitarian experience-based dialogue) is that of critical social theory, grounded in phenomenology. Reflection emerges from concrete practice in daily life, and as Shor says, "When we think critically on our action, then we can act critically on our thinking" (p. 123). His notion of critical teaching draws upon a Freirian approach where social practice is the object of study, while dialogue is the form of study. Such an approach seeks to problematize (question the taken for granted assumptions) the undemocratic quality of social life, which involves the externalization of false consciousness (holding up for examination those practices which on the surface appear to be in our best interest, but when looked at more critically, they reveal a sense of control through unequal power structures in society). As Shor engages in this problematization of education, he seeks to illustrate how educational institutions are, in effect, "battlefields for the conflicting interests of the state and the people" (p. 40).

As one example of his externalization of false consciousness, Shor calls attention to the humanities' potential for critical thought, while at the same time being matched by its potential for nonthought:

> The "great tradition" of any discipline, or what is sometimes referred to as its "architectural elegance of thought," is based in a tradition which largely ignores the achievements of women, minorities, and working people. It is habitual for humanities courses to have over-loaded reading lists enshrining texts by upper-class white men. A critical study of the "great tradition" has to proceed hand-in-hand with a revision . . . The growth potential of the humanities is enhanced by presenting more than the cultural works of one sex, one race, one class (p. 29).

The false consciousness exposed is that while we look to the humanities to be liberating, it can work to the oppression of some groups by gender, race, and class exclusion. As we confront these contradictions in society, we begin to think more critically about our taken for granted assumptions. This becomes an example of the way critical thinking is "revealed" in questioning the practices of daily life. Shor also problematizes narrow vocationalism, wherein the school curriculum is structured so that students have to make choices between "earning a living and learning how to think," between a narrow skill and a critically expansive encounter with reality. If we think that job training in a narrow sense of skills for specific employment is in the best interests of students, we might do well to consider the potential truth in Shor's claim: "Career training is a way of keeping workers materially and ideologically in their place" (p. 24). To hold up these claims for examination, at least allows the opportunity for confronting potentially unequal forms of education.

As contradictions are exposed, consciousness is raised to the possible ways in which we unwittingly participate in norms that are equally repressive. In the examination of Shor's claims about potentially oppressive conditions in school and society, we were led to confront some of our own realities in schools. As one person in the class shared, the more she became involved in teaching for critical thinking, the more she became aware of how these goals and expectations might really be at cross purposes with the school's expectations for students and teachers (Roe, 1986, in press). She cited the pressure of completing all the content in the curriculum guide so as to assure that her students would be able to compete with other students in the system's final examinations, rather than spending more time on process as she would prefer. Other pressures experienced also related to the technocratic mentality: the accountability tension of making objectives and learning measurable while finding that processes and activities of thinking were not so narrowly defined; the teaching evaluation tension surfaced when she began to question the criteria for evaluation by her supervisors as not generally giving recognition to the critical intent. Holding these tensions up for examination allowed for the exposure of how controlling they were of ways that would encourage critical thought.

Enhancing the Critical Orientation Through Models of Teaching

As the nature of critical thinking came to be understood, Joyce and Weil's *Models of Teaching* helped to provide a framework in the way of illustrating theoretical positions about learning and teaching that could be used to enhance development of a critical orientation. In that attempt, the focus was not on learning "how to do" approaches in the sense of techniques, but rather to understand teaching and learning by looking through different philosophical lenses that have different ends in view, and to provide a guide for developing those different end views.

An example lesson: To illustrate the way in which cognitive theories of learning from *Models of Teaching* can be used to develop specific thinking capacities that are framed within a critical phenomenological foundation as described in this paper, the following is an example lesson I developed for The Pennsylvania State University Value Reasoning Curriculum (Hultgren & Gossens-Conlon, 1980) which has been embellished for use in the class to illustrate the focus on process as well as the underlying critical framework. The lesson illustrates the Taba Model which seeks to develop inductive thinking through three major cognitive tasks: Concept formation, interpretation of data, and application of principles. The end values of the lesson from a cognitive psychology dimension are to foster the thinking capacities involved in inductive thinking (differentiation, grouping, identifying common properties, labeling, categorizing, distinguishing relevant from irrelevant information, relating points, inferring, and justifying). The end values for the lesson from a critical theory perspective are to examine the ways in which we are controlled by the norms and social meanings of parenthood that exist and to see the ways in which such norms have real consequences for behavior regarding the question of whether or not to have children. As you read through the lesson, pay particular attention to how the questions help to bring out the thinking capacities that are sought (process concepts) as well as how the questions, particularly in Phases IV and V illustrate the critical intent (challenging the truth and rightness of ideas; pulling out embedded ideas, beliefs, and values; pointing out contradictions; looking at consequences of limiting or distorted ideas).

Taba Inductive Model

PRACTICAL PROBLEM: What to do regarding self as parent?

OBJECTIVE: Differentiate between rational and nonrational motivations for parenthood.
Evaluate consequences of social expectations for parenthood.

Generalization for examination:

Social meanings of parenthood have real consequences for behavior.

Phase I: The following is a list of reasons people give for having children. (Can you add any more?)

(Enumeration)

- civic responsibility
- expansion of self
- social maturity
- gives meaning to marriage
- conformity to norms
- stabilization of personality
- economic utility
- desire to be pregnant
- provide grandchildren
- need to be somebody
- want to contribute my abilities and resources to the development of an individual in an optium environment
- generativity needs
- power and influence
- religious obligation
- sexual virility
- primary group ties
- stimulation, novelty, fun
- creativity
- social comparison, competition
- dependency needs
- sincerely want and like children
- take care of you in old age
- carry on the family name

Phase II: Form these reasons into groups that share similar characteristics.

(Grouping)

PROCESS CONCEPTS:	What items seem to belong together? What is the basis on which you are grouping them?
Identifying Common Properties	Do all of the items share something in common? Are there any groups you would want to change? Do any items belong in more than one group?

Phase III: Label each of these groups with a title (word or phrase) that reflects characteristics of all items in the group.

(Labeling)

PROCESS CONCEPTS:	Why would you give that particular label? Do all those items belong together?
Categorizing	How are they alike? Why is that label appropriate?

Phase IV and V: **Questions:**

(Identifying Points and Explaining Items)

PROCESS CONCEPTS:

Distinguishing Relevant From Irrelevant Information

1. As you look at these groups, what do you see regarding motivations toward parenting?
2. How are the groups different in regard to whose needs are given primary attention?
3. There are rational and nonrational reasons for having children. Do you think any of these groups are more rational than others? Why?
4. What causes one to have reasons in some categories and not in others?
5. Is any one group more important than another? Why?
6. Do you know of any literature that would support reasons for having children in the groups you have formed? Does anyone know of conflicting reports? What is the source?

Relating Points	7.	What are the likely consequences for individuals, the children born, family, or society if certain of the reasons were more strongly believed than others?
	8.	What is conformity to norms? Do you see several categories being influenced by this?
	9.	Why do people not examine reasons behind choices?

Phase VI: From what you see by the groupings, and the discussion we have had, can you make any generalizations regarding what we have said?

(Making Inferences)

PROCESS CONCEPTS: Inferring	Can you draw any conclusions from what we have on the board? What seems to be the relationship between these groupings? What does all this mean?

Phase VII: Let us go with this generalization: Social meanings of parenthood have real consequences for behavior. What would happen if a large segment of society decided not to have children?

(Predicting Consequences)

PROCESS CONCEPTS:

Predicting
Consequences

Phase VIII: Why do you say that? Would anyone agree or disagree?

(Explaining and Supporting Predictions)

PROCESS CONCEPTS:

Determining
Causal Links

Phase IX: What would it take for that to happen?

(Verifying Predictions)	Would this be true in all cases?

PROCESS CONCEPTS:

Verification
Justifying

As this lesson reveals, there are structures and norms within society that promote actions that may not be in the best interests for all concerned. Content wise, as we consider reasons for having children within the context of a course in home economics, we must do more than focus on advantages and disadvantages of having children; in the critical perspective we must probe deeper into the social context for how ideas about parenthood have evolved and in whose interest were they formed. As Brown (1985) suggests, study of the family by the mode of a critical hermeneutics has a practical intent:

> The aim would be to disclose for use by families the nature of common problems in distorted communication and the source(s) of those problems in the realities of contemporary society . . . But the family is not an island and its own patterns of language and communication are influenced by those in the culture and power relations of the larger society (p. 881).

The point of a critical perspective, then, is to develop the conceptual tools necessary (which the models of teaching can help accomplish) for examining the ideological beliefs that exist in society due to dominating forces. This requires critique which exposes the nature of the distortion and its sources in our lives, as well as the ability to be reflective of our actions in every day life.

Other models developed by class members: To illustrate the way in which other models of teaching were used in the class within the critical orientation, one person chose the Synectics Model (which seeks to foster creativity) in the examination of the movie "Ordinary People" for the purpose of looking at communication in families (Stark, 1986, in press). She saw the use of metaphors as helping force students to develop imagination and insight into everyday events. Metaphors, then, help to generate alternative views and different mental patterns as we "unfreeze" some of the taken for granted ideas we hold. Another person used the Role Playing Model to examine the social behavior and values underlying decisions about family financial management (Johnson, 1986, in press). As she explained the value of the model, she saw the dual roles of the critical perspective and the process of communication coming together to help bring the underlying intent of the role play activity to a level which fosters critical thinking about values promoted in society regarding family financial management. Another person developed a lesson around Shor's "Extraordinarily Re-experiencing the Ordinary" for a critical look and re-perception of the "Cabbage Patch Doll Phenomenon" (Boettner, 1986, in press). Through her critical "re-looking" she helped to create a deeper probing of this phenomenon with such questions: Who created the phenomenon of the Cabbage Patch Doll? What social implications are created when a parent purchases a doll? How do advertising and media create wants and desires for people? The intent is a consciousness raising of how societal pressures promote certain practices that have long range consequences.

Bridging the Cognitive and Philosophical Dimensions: Toward an Ethical Orientation

The intent of sharing each of these examples is to reflect how I seek to bring together a cognitive dimension in teaching critical thinking with a philosophical one as I have turned to ground critical thinking in a phenomenological and critical foundation. My concern, then, has as much to do with the development of an ethical orientation (attitude) as with the thought processes necessary to foster that way of thinking. As Shor says:

> Teaching the purely technical aspects of the procedure (liberatory teaching) is not difficult; the difficulty lies rather in the creation of a new attitude — that of dialogue, so absent in our own upbringing and education (1980, p. 97).

The difficulty of this challenge was recognized by one person in the class, commenting on this attitude as one she is still trying to achieve (Kowalczyk, 1986, in press). She reflected on her past desire for structure, with lesson plans having well organized objectives, activities, and accurate timing. The liberatory classroom, as she sees it, still needs objectives and activities, but it requires much more flexibility so as to pursue the flow of the class created in the process together as inquiry unfolds. To her this kind of teaching is much riskier, but also much more vital and exciting.

In closing, I return to the tenets of thinking I found in Heidegger (1968) that guided me as I began conceptualizing my course on critical thinking in the foundations of phenomenology and critical social theory:

1. Thinking is not so much an act as a way of living or dwelling . . . a way of life. It is a remembering who we are as human beings and where we belong (p. xi).
2. Thinking is a concrete seeing and saying of the way the world is (p. xii).
3. Thinking is questioning and setting ourselves in question as much as the cherished opinions and inherited doctrines we have long taken for granted. Each must learn to do it for himself . . . questioning is a way or path of thinking each one must clear for himself (p. xii-xiii).
4. The call of thought is thus the call to be attentive to things as they are, to let them be as they are, and to think them and ourselves together (p. xiv).

It is my hope that we can remain together in this "call to thinking" as we move beyond the talking about or defining stage of critical thinking skills (psychological/instrumental orientation) to one where we learn what it means to "be" in critical thinking, as we dialogue about critical social realities (the phenomenological critical grounding).

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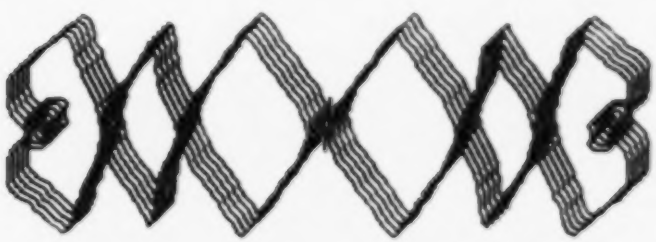

PROBLEM SOLVING: DEFINITION AND MEANING

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It is strange that we expect students. . . to solve problems yet seldom teach them anything about problem solving . . . It is time we made up for this lack.
D. A. Norman (1980, p. 97)

How do you as a home economics teacher respond to this statement? Do you agree? Disagree? Or say, "We in home economics **have been** teaching problem solving!" Or is your answer something like this: "I've been **trying** to teach problem solving — I tell students about the problem solving steps, but I'm not sure I'm doing a good job!"

Problem solving **has been** and continues to be an integral part of the home economics education philosophy and practice. In their 1954 classic home economics education text book, *Homemaking Education in the Classroom*, Maude Williamson and Mary Stewart Lyle recognized that "life is one problem following another . . ." and concluded that "problem-solving experiences are important in learning, are important in pupil development" (p. 128).

Recently, Marjorie Brown and Beatrice Paolucci (1979) pointed out that the unique service home economists provide is enabling families, both as individuals and as a social institution, to solve **practical** problems. The problems home economists are concerned with are not only abstract, theoretical problems, or technical, how to problems, but practical problems. "A practical problem is a question about what action to take . . . a value question: . . . 'What should I (or we) do?' or 'What is the best thing for me (or us) to do?' "(Brown & Paolucci, 1979, p. 25).

This view of home economics has raised questions among home economists: Have we been helping families solve practical problems? Or have we only been focusing on theoretical, 'what is,' questions, or technical, 'how to,' questions? What is problem solving anyway? Have we only "told" students "steps in problem solving"? What should we do to enable family members and families to solve problems?

Problems

What is a problem? Intuitively everyone knows what a problem is — we face them throughout our lives:

Deciding what to eat	Solving a puzzle or math question
Designing a room arrangement	Selecting a book to read
Writing a letter	Choosing a good chess move
Removing stains	Finding a place to park

Basically, a problem occurs when a person "wants something that is not immediately attainable" (Glass, Holyoak, & Santa, 1979, p. 392). In its linguistic form, a problem is a question that requires an answer or solution "which cannot be determined by habit or by lack of thoughtful consideration" (Brown & Paolucci, 1979, p. 24). While problems may be diverse, all have **three basic components** (Glass, Holyoak, & Santa, 1979, p. 392):

1. A set of **given information**, a description of the problem: initial state.
2. A set of **operations**, or actions that the problem solver can use to achieve a solution.
3. A **goal**, or description of what would constitute a solution to the problem: criteria for evaluating solutions.

Types of Problems

Problems differ along a continuum from being well-structured or well-defined to being ill-structured or ill-defined questions. (See Table 1.) Most of the questions or problems posed in school are **well-structured problems**. These problems include all the information about the problem, the procedure or operations needed to solve the problem, and a description of the criteria to use to determine the "correctness" of a solution. The procedure often identifies an algorithm, a step by step prescription guaranteed to achieve a specific goal. An example of a math algorithm is: "Numbers should be added together when a plus sign is used." While algorithms are often viewed as rules, recipes are also algorithms. When such structured problems are posed, the problem solver and the problem poser have complete confidence that there is a single "right" answer when rules or recipes are used.

Technical, how to problems, are well-structured problems. An example of a well-structured problem in home economics involves giving students a "recipe" for creating a product, such as bread or a garment. The description of the problem is given; so are the characteristics of a "good" product (goal or criteria for evaluating the solution) and a step by step demonstration of the procedure to use to achieve a "good" product (the operations needed to solve the problem).

Another group of problems include **structured problems requiring productive thinking** (Frederiksen, 1984). These structured problems may lack a crucial step in the procedure for a correct solution, and, consequently, the problem solver must generate an algorithm or a heuristic for solving the problem.

A heuristic is a procedure that is **believed** to have a reasonable likelihood of achieving a correct solution. "Rules of thumb" are heuristics which guide problem solving. The term, heuristic, originates from a Greek word, *heuriskin*, meaning "serving to discover" (Nickerson, Perkins, & Smith, 1985). Thus, a heuristic may guide the problem solver in discovering the correct answer. Heuristics require inductive and analogical reasoning leading to a plausible conclusion (Newell & Simon, 1972). Story problems in math and science are examples of structured problems requiring productive thinking. When home economics students are given a list of stains on identified fabrics, and told to tell how to remove the stain, they are being given a structured problem requiring productive thinking. Students must produce a rule of thumb for removing stains. "Blood can usually be removed with cold water" is an example of a rule of thumb, or heuristic, which might be used in solving a blood stain problem. However, in real life, more than one heuristic may be needed to remove a stain such as blood.

Ill-structured, ill-defined problems are a third group of problems. Most social and political problems faced everyday, such as practical, what to do problems are in this category. Many science and creative tasks are also ill-structured problems. In everyday life, the problem solver is not given a neatly outlined problem. Everyday problems lack clear direction for how to go about solving the problem and even the criteria for deciding if the problem is solved must be created by the problem solver.

Family members and families must solve unstructured problems which arise everyday: What to do to remove a stain found on carpet in a rented apartment; what to prepare for breakfast when there's nothing in house except some flour, milk, salt and pepper; what to buy at the grocery store for a family of four when you have only $30.00 and need food for a week; what to do to prepare a special meal for a friend when you've never cooked anything except hot dogs and soup from a can; what to do about an irritable family member; . . . the list goes on and on! In real life the problem must even be identified before it can be solved! Even one problem, like "what to do to remove a stain found on a carpet," can involve many sub-problems: What is the carpet fiber? How can I find out? What is the stain? What stain removers are available? Where can I get something to remove this stain? Which is most appropriate for this stain on this carpet?

Heuristics are most useful in solving these problems. Heuristics such as hypothesis-and-test, try the best solution first, and the practical reasoning process are examples of procedures to use in solving ill-defined problems.

Uncertainty surrounds ill-structured problems (Beyth-Marom & Dekel, 1985). No one knows the "correct" answer. This uncertainty undermines confidence and creates stress.

Table I. Types of Problems

Well-structured problems	Structured problems requiring productive thinking	Ill-structured, fuzzy problems
Examples:		
Math, science problems. Technical, how to questions.	Story problems in math, science; games.	Most social, political, everyday work, and many science problems; practical questions; creative tasks; write poem, paint picture, experiment.
Characteristics		
Clearly formulated; needed information included	Clearly formulated; needed information included	Lack clear formulation; needed information not included; information from memory and external sources required
Criteria available for testing correctness of solutions	Criteria available for testing correctness of solutions	Lack criteria for evaluating solutions; criteria must be generated
Procedure known that guarantees correct solution, i.e., Algorithm[1]	Lack procedure or crucial step in procedure for correct solution; procedure (i.e., algorithm or heuristic[2]) must be generated	Lack procedure that guarantees correct solution Procedure (i.e., heuristic) must be generated e.g., *hypothesis-and-test *best-first search *practical reasoning
Certainty; complete confidence; single answer	Personal uncertainty; someone knows answer	Uncertainty; no one knows "correct" answer

[1]Algorithm: A step by step prescription guaranteed to accomplish a particular goal.
[2]Heuristic: A procedure **believed** to have a reasonable likelihood of yeilding a solution, or bringing one closer to solution. From Greek word, *heuriskin*, meaning "serving to discover" (Nickerson, Perkins & Smith, 1985). Denotes inductive and analogical reasoning leading to plausible conclusions (Newell & Simon, 1972).

Problem Solving: Definitions

Human survival depends on the ability to solve problems (Rowe 1985). This central aspect of thinking (Johnson, 1972; Glass, Holyoak, & Santa, 1979) and intelligence has been defined in varying ways depending upon the understandings of those defining it. From a behaviorist perspective, problem solving involves **behaviors used by a motivated subject attempting to achieve a goal** (Johnson, 1972), while from a Gestalt perspective, problem solving involves **some type of reorganization of relationships, and results from "insight."** Problem solving involves interaction between the problem solver and the task environment (Polson & Jeffries, 1985).

New developments in cognitive psychology have created a new information processing perspective. Recent research suggests that problem solving is **a complex cognitive, thinking, process — both a searching process and an understanding process:**

> . . . search(ing) through a problem space . . . (leads to) the solver's representation of the task. . . This representation is constructed by understanding processes that make use of both general comprehension mechanisms and the problem solver's knowledge of the specific domain. Once a problem space is constructed, efforts to solve the problem may lead to an increase in the solver's understanding, which leads to the generation of a new problem space, and so on, with search and understanding processes alternating in complex ways (Polson & Jeffries, 1985, pp. 418-419).

This complex cognitive process requires extensive, accessible knowledge (Glaser, 1984; Larkin, 1980; Laster, 1985; Newell & Simon, 1972; Simon, 1980). Both formal, **school-learned knowledge** and informal, tacit knowledge — the **knowledge learned outside of school** — seem to be necessary for intelligent problem solving (Sternberg, 1985a, b). This includes 1)conceptual knowledge — facts, principles, and abstractions or concepts; 2) pattern recognition; and 3) procedural knowledge.

While knowledge is necessary, it is insufficient. Knowledge and cognitive skills are required for problem solving. The major categories of cognitive skills needed for intelligent problem solving appear to be (Sternberg, 1985a, b):

1. General metacognitive strategies, or executive processes for guiding general problem solving (Simon, 1980), e.g., planning, representation, self-monitoring or self-management processes (Belmont, Butterfield, & Ferretti, 1982; Brown, Campione, & Day, 1981; Rigney, 1980);

2. Performance processes needed for guiding specific tasks, e.g., washing hands, constructing a garment, supervising a toddler, reading; and

3. Learning processes needed for gaining new knowledge, or skills.

Through her synthesis of these varying perspectives, Rowe (1985, p. 150) describes problem solving this way:

> "The term problem solving can refer to all . . . overt and covert activities which take place to reach a solution or otherwise accomplish a goal or purpose in the problem solving situation. More specifically, problem solving describes broadly the results of the interaction among the problem or task, the problem solver, the situational circumstances or the environment in which the problem is presented or presents itself, the behaviors or processes which take place between the point of initial contact with the problem by the problem solver and the solution produced, and the solution or product of the problem solving activity" (Rowe, 1985, p. 150).

While the word "problem" often has a negative connotation, in everyday life, we are often faced with "happy," not negative, but challenging problems: "Which suit should I buy?" or "Where should we go to have fun?" or "What does this mean?" Problem solving definitions reflect negative, neutral and positive connotations. For example, Polya (1962, ix) defines problem solving as, **"finding a way out of a difficulty, a way around an obstacle, attaining an aim that was not immediately understandable,"** while Rowe (1985, p. 4) views problem solving more broadly and positively as **"meeting challenges."** Finding an answer or solution to a question through thoughtful consideration and reasoning appears to be Brown and Paolucci's (1979) more neutral definition of problem solving.

Stages in Solving Problems

In 1926, Wallas hypothesized that problem solving progresses through four stages. Through the years these stages have been verified:

1. Preparation or familiarization (understanding the nature of problem, desired goal, and the givens);
2. Production stage (produces the solution paths that define the problem space);
3. Judgment or evaluation (evaluate the solution paths in order to select the best one); and
4. Incubation (time out period away from actively trying to solve problem; dissipates fatigue, promotes selective forgetting, allows individual to get out of sets or ruts in thinking) (Halpern, 1984).

Throughout these stages individuals use many processes including representing the problem; using problem solving procedures, including algorithms (specific rules for correct solution) and heuristics (general strategies and plans); and creating and recognizing patterns (Laster, 1985). New psychological and neuroscience research is revealing more about the cognitive processes novice and expert problem solvers use, and most importantly, is suggesting how we can develop problem solving skills ourselves, and how we can help others develop these skills.

Problem Solving and Intelligence

Problem solving has often been equated with intelligence. A comparison between problem solving and intelligence reveals some similarities and differences (see Table 2). Intelligence encompasses complex cognitive processes, such as perception, memory, and problem solving (Rowe, 1985). Both problem solving and intelligence are cognitive processes, not behavior which can be observed and measured using traditional assessment techniques. Problem solving requires and reflects intelligence; intelligence influences problem solving (Rowe, 1985). Both problem solving and intelligence require extensive, accessible knowledge and cognitive skills.

In summary, problem solving is meeting challenges. Problem solving appears to be one complex process of intelligence: a complex cognitive process/activity, including decision making; representing, planning, self-monitoring, reasoning, creativity, and critical evaluation (Halpern, 1984; Rowe, 1985; Wagner & Sternberg, 1984; Yinger, 1980). Problem solving requires extensive, accessible knowledge (Glaser, 1984; Larkin, 1980; Laster, 1985) and cognitive skills (Greeno, 1980; Frederiksen, 1984; Laster, 1985; Simon, 1980; Sternberg, 1985a).

Table 2. Problem Solving and Intelligence

Problem Solving	Intelligence
• Complex cognitive process/activity, including decision making, reasoning, creativity, critical evaluation (Halpern, 1984; Rowe, 1985; Wagner & Sternberg, 1984)	• Complex cognitive process/activity, including problem solving (Rowe, 1985)
• One complex process of intelligence	• Encompasses more cognitive processes than problem solving
• Not behavior which can be observed and measured	• Not behavior which can be observed and measured
• Requires and reflects intelligence	• Influences problem solving (Rowe, 1985)
• Requires extensive, accessible knowledge (Glaser, 1984; Larkin, 1980; Laster, 1984)	• Requires extensive, accessible knowledge
• Formal knowledge (school learned) • Informal, tacit, knowledge (learned outside school) (Sternberg, 1985a, b) 1) Conceptual knowledge (facts, principles, and abstractions or concepts) 2) Pattern recognition 3) Procedural knowledge	
• Requires extensive cognitive skills: (Feuerstein, et al., 1980; Sternberg, 1985a, b)	• Requires extensive cognitive skills: (Feuerstein, et al., 1980; Sternberg, 1985a, b)
• General metacognitive strategies or executive processes (Sternberg, 1985a, b) e.g., — Planning — Representation (Greeno, 1980) — Self-monitoring or self-management processes (Belmont, Butterfield, & Ferretti, 1982; Brown, Campione & Day, 1981; Rigney, 1980) • Performance processes (Sternberg, 1985a, b) • Learning processes or knowledge acquisition (Sternberg, 1985a, b)	

Guidelines for Problems Solving Instruction

To be able to solve family and home problems in the uncertain future, home economics students need:

- To think **about** problems and problem solving,
- To develop concepts and processes for solving different types of problems, and
- To solve hypothetical, simulated, and real everyday home and family problems.

To meet these needs, five guidelines are proposed for teachers:

1. Help students understand the characteristics of problems and what is needed to solve different types of problems.
2. Help students become critically aware of their world and cultural reality so they can identify problems — the first and most important dimension of problem solving (Sternberg, 1985a). Without problem awareness and identification, no problem solving will occur. Family members need this ability and need experiences to develop their awareness and valuing of their ability to meet these inevitable challenges.
3. Pose and help students identify and solve a range of home and family problems: well-structured, structured but requiring productive thinking, and ill-structured problems. Through experience in problem solving, students will develop the needed knowledge base and cognitive skills for solving present and future problems of these types as they try to reach immediate goals.
4. Help students develop an extensive, accessible knowledge base for solving home and family problems:
   - Facts, principles, and concepts,
   - Patterns of actions which require other action, and
   - Procedural knowledge, including algorithms and heuristics for solving different types of problems and different home and family problems.

   Because students need knowledge to solve the problems, they need help in developing that knowledge so it will be accessible for future use.
5. Help students develop critical cognitive processes needed for solving problems, especially unstructured problems, so the processes become skills and are used automatically.
   - Representing processes, like creating worksheets for decision making (Halpren, 1984), diagramming, charting, analogy creating, imaging, and illustrating;
   - Planning processes;
   - Self-monitoring, self-management processes, such as systematically checking problem solving processes, e.g.:

     What is the **real** problem?
     What should I do first?
     What information do I need to solve this problem?
     Where can I go wrong?
     What are my alternatives?
     What will be the consequences of doing this?
     Will the consequences be good for me? my family?
     Have I forgotten anything important?
     Do I need to think about this for a while — let this incubate?
   - Perception processes needed for acquiring the informal, tacit knowledge that must be learned outside of school for successfully solving everyday problems, e.g.:

     Identifying non-verbal cues
     Listening and observing for feelings
     Identifying and verbalizing feelings
     Inferring from limited information
     Accurately empathizing with others
     Questioning; information interviewing
     Recognizing patterns — visual, verbal and action patterns.

Such skill development involves helping students understand the value of the processes, develop transferable concepts of the processes, practice the processes in simulated and realistic situations, and seek feedback from self, others and the natural consequences of using the processes.

It is time home economics teachers teach students **about** problem solving, **for** problem solving, and **to** solve home and family problems. This is our challenge and unique service.

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INSTRUCTIONAL STRATEGIES FOR TEACHING PRACTICAL REASONING IN CONSUMER HOMEMAKING CLASSROOMS

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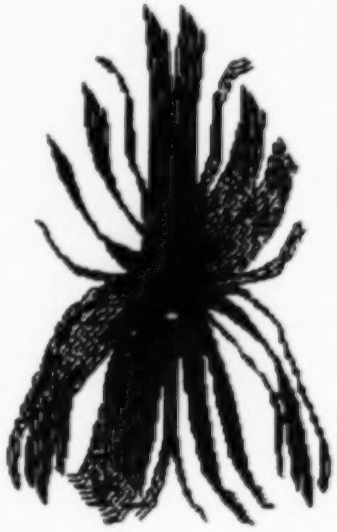


Have you asked yourself these questions?

- What should I wear today?
- What should I eat for lunch?
- How much money should I spend on this gift?
- What should I do about my "sick car"?

Or in a more serious vein, have you asked:

- Should I go to college?
- Should I have children?
- What should I do about my sick mother — 400 or more miles away?

Has your family ever asked these questions?

- What should we do about our dirty house?
- What are we going to do about getting the laundry done this week?
- Who should we buy gifts for this year?
- Should we buy a car? A television? A VCR? or . . . the list is endless.
- Which car, television, or VCR should we buy?
- What should be done with the baby if we work outside the home?
- What should we do about our new neighbors?
- Which candidate will make decisions in the best interests of our family and community?

If you or your family have asked these or similar questions, you have asked and resolved practical questions. Such "what to do" questions are practical problems facing all of us, repeatedly, throughout our lifetime. Every day of their lives, individuals must decide what to wear and eat, and how to act toward family members, friends and strangers. Families make decisions with far reaching consequences. They must decide if they should have children; how they should rear the children they have; how they should care for their elderly; and how they should relate to their neighbors and communities.

These practical everyday problems are ill-structured problems (Beyth-Marom & Dekel, 1985; Frederiksen, 1984; Sternberg, 1985a). Unlike well-structured mathematical, science, or other problems posed in schools, the nature of everyday and practical problems may be unclear. In addition most individual and interpersonal family problems lack the criteria for evaluating the solution, as well as the procedure for solving the problem. Consequently, practical problem solving must generate the criteria and the procedure for solving the problem, the important information which must be considered, and the consequences of varying actions. Since no one knows a "correct answer" to these ill-structured problems, much uncertainty and dissonance is created (see Figure 1, p. 46).

Consequently, everyday problem solving, including practical problem solving, differs from solving the structured problems found in schools in several important ways (Sternberg, 1985a, pp. 195-198):

1. In the everyday world, the first and sometimes most difficult step in problem solving is the recognition that a problem exists.
2. In everyday problem solving, it is often harder to figure out just what the problem is than to figure out how to solve it.
3. Everyday problems tend to be ill-structured.
4. In everyday problem solving, it is not usually clear just what information will be needed to solve a given problem, nor is it always clear where the requisite information can be found.
5. The solutions to everyday problems depend on and interact with the contexts in which the problems are presented.
6. Everyday problems generally have no one **right** solution, and even the criteria for what constitutes a **best** solution are often not clear.
7. The solutions of everyday problems depend at least as much on informal knowledge as on formal knowledge.
8. Solutions to important everyday problems have consequences that matter.
9. Everyday problem solving often occurs in groups. (This is particularly true for problem solving in homes and families).
10. Everyday problems can be complicated, messy, and stubbornly persistent.

Recognizing the characteristics of everyday, practical problems, and the need to help students develop good thinking skills in home economics, a new curriculum content component is currently being introduced into secondary home economics curriculum (Ohio, 1984; Minnesota, 1983; Wisconsin, 1987). This component, practical reasoning, is a thinking process necessary for solving the every day routine and unexpected problems facing individuals and families.

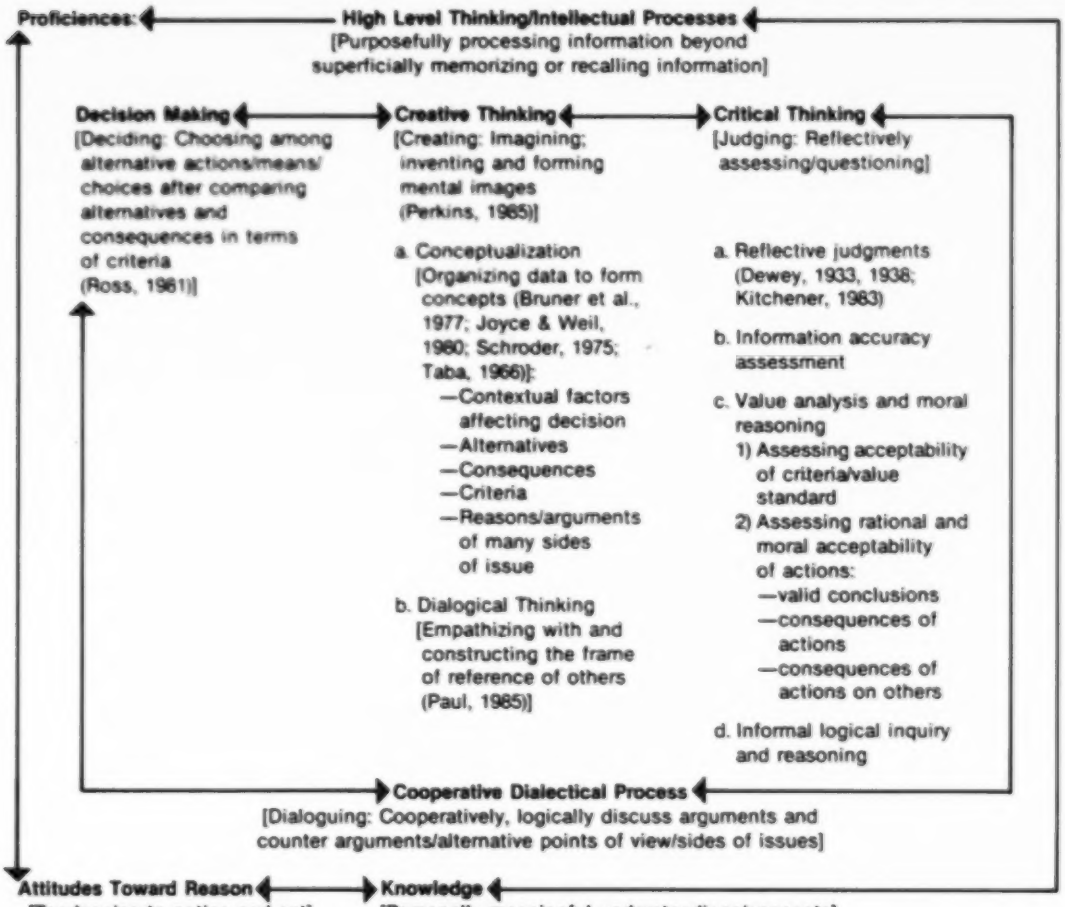
Rationale for Practical Reasoning as a Home Economics Curriculum Component

The ability to make everyday practical decisions is often taken for granted. We assume that since everyone makes these decisions as a part of everyday life, everyone has the necessary problem solving abilities. But our informal observations suggest that even though individuals may have the rudiments of practical reasoning, they do not reason well to answer these everyday questions, especially the questions involving actions affecting the well-being of other people. The results of students' decisions suggest that they sometimes decide what to believe and do impulsively, because of peer pressure or because of tradition. Often decisions seem to be made without regard for the rational and moral principles and standards of the culture, and without considering alternative beliefs and actions of others or the consequences of their actions on the well-being of themselves and others.

Figure 1. PRACTICAL REASONING: Function and Structure

Function: Solve everyday practical problems, i.e., the "what **should** I (or we) do?" value questions, with rational and moral judgments.

Structure: Deciding what to do as result of considering two kinds of reasons:
1) acceptable value standards (motivating reasons), and 2) actions which fulfill value standard. A complex higher thinking process involving creating, judging, deciding, and dialoguing. For rational and moral judgments, individuals need proficiencies in these higher level thinking and social interaction processes; knowledge of home economics concepts and second order thinking concepts; and positive attitudes toward reason.


Proficiences:
High Level Thinking/Intellectual Processes
[Purposefully processing information beyond superficially memorizing or recalling information]
Decision Making
[Deciding: Choosing among alternative actions/means/ choices after comparing alternatives and consequences in terms of criteria (Ross, 1981)]
Creative Thinking
[Creating: Imagining; inventing and forming mental images (Perkins, 1965)]
a. Conceptualization
[Organizing data to form concepts (Bruner et al., 1977; Joyce & Weil, 1980; Schroder, 1975; Taba, 1966)]:
—Contextual factors affecting decision
—Alternatives
—Consequences
—Criteria
—Reasons/arguments of many sides of issue
b. Dialogical Thinking
[Empathizing with and constructing the frame of reference of others (Paul, 1985)]
Critical Thinking
[Judging: Reflectively assessing/questioning]
a. Reflective judgments (Dewey, 1933, 1938; Kitchener, 1983)
b. Information accuracy assessment
c. Value analysis and moral reasoning
1) Assessing acceptability of criteria/value standard
2) Assessing rational and moral acceptability of actions:
—valid conclusions
—consequences of actions
—consequences of actions on others
d. Informal logical inquiry and reasoning
Cooperative Dialectical Process
[Dialoguing: Cooperatively, logically discuss arguments and counter arguments/alternative points of view/sides of issues]
Attitudes Toward Reason
[Tendencies to notice and act]
Knowledge
[Personally meaningful understandings/concepts]
1. Willingness to reason with others
2. Sensitiveness to long term consequences of actions
3. Sensitiveness to morally hazardous actions
4. Tendency to undertake practical reasoning when required
1. Home economics concepts
a. Value/standard concepts/ principles
b. Alternative actions/ means/strategies
c. Consequences of alternative actions
d. Factors affecting potential consequences of actions
2. Practical reasoning concepts [Second order concepts used to think **about** our value concepts, rules, and judgments (Coombs, 1964b)]
a. Vocabulary of practical reasoning
b. Methods of practical reasoning
c. Standards for reasoning, e.g., moral and logical rules (Perkins, 1983)

Through the more formal research process, Perkins (1985b) found naive reasoners seemed to stop reasoning as soon as their reasons met their "makes sense to me" criteria. They reasoned in a superficial way, avoiding cognitive complexity and dissonance, and were ignorant of pitfalls of reasoning. Experience and research shows these "makes sense" decisions and intuitive judgments are most often not the best judgment (Beyth-Marom & Dekel, 1985; Halpern, 1985). Furthermore, Perkins (in press) found normal education at the high school, college, and graduate school levels had only a slight impact on everyday informal reasoning skills.

Recent developments in cognitive psychology further support the need to formally focus on enhancing the problem solving abilities of students (Laster, 1985). Analysis of the cognitive components required for competent, intelligent problem solving performance show two critical components: extensive, accessible knowledge, and cognitive skills. Simon (1980, p. 82) concludes that, "There is no such thing as expertise without knowledge — extensive, accessible knowledge." Brown and Campione (1982, p. 221) also conclude that, "Knowledge is necessary, but not sufficient, for performance. Individuals vary not only in what they know but in what they do with what they know." For example, Feuerstein and his associates (1980)and Sternberg (1984) have identified cognitive processes which appear to influence intelligent problem solving behavior. Furthermore, Feuerstein and his associates (1980) have demonstrated that when adolescents have cognitive deficiencies, missing cognitive processes can be developed. Such discoveries have led to a new view of intelligence. This new perspective conceptualizes intelligence as a set of thinking and learning skills that can be modified. This view differs from the concept of intelligence as a stable, fixed factor or set of factors (Brown & Campione, 1982; Detterman & Sternberg, 1982; Glaser & Pellegrino, 1982; Resnick, 1979; Sternberg, 1984; Wagner & Sternberg, 1984).

Since the profession of home economics is concerned with the practical problems of home and family (Brown & Paolucci, 1979), home economics education already provides the home economics knowledge base needed to resolve home and family problems. This knowledge is needed to nurture human development, feed and nourish family members, manage economic and other family resources, meet clothing and textile needs, create living environments, and coordinate work and family responsibilities. In addition, some cognitive abilities associated with intelligent problem solving are already an important home economics curriculum component. Goal setting, planning or means-ends reasoning, and decision making are important concepts and skills of management, a long-standing unifying home economics concept and cognitive skill. The addition of practical reasoning as another unifying concept and skill will help students develop the additional cognitive structures and processes needed for resolving the practical problems facing individuals and families in everyday interpersonal living (Brown, 1978).

What is Practical Reasoning?

Practical reasoning is reaching conclusions about what to do from knowledge available (see Figure 1). In home economics, practical reasoning is **reaching conclusions about what to do in everyday home and family problems** from the knowledge available to solve those problems. In other words, deciding what to do and believe from knowledge available.

Innumerable conclusions must be made to reach one major conclusion or decision, such as, "What to do about an ill family member." To name only a few, conclusions or decisions must be made concerning the seriousness of the illness, criteria (value standards) for determining the seriousness of illness, problems or questions which must be answered, sources of reliable information, the validity and reliability of the ill family member's complaints, the criteria the ill person uses for pain, characteristics of the ill person's pain, criteria for determining the reliability of medical information, sources of reliable medical information, alternative health care services, consequences of alternative health care services, and criteria family members will use to judge the acceptability of health care services provided and whether or not to continue the use of any number of health care servcies which are used. The list of decisions and conclusions relevant to such a situation goes on and on. Sometimes the reasoning required can be accomplished very rapidly — when the illness is familiar, such as a cold, or when the knowledge needed is already known or easily obtained. However, sometimes the needed knowledge is not easily obtained and may not even be known. For example, the family may not know the consequences of following particular medical procedures for a family member. In such situations, practical reasoning — deciding what to do and believe based on incomplete information — is not easily accomplished.

The information needed includes four kinds of knowledge: 1) value standards for conclusions/decisions (Brown, 1978; Coombs, 1984b); personal and environmental contexual factors in the problem situation (Brown, 1978; Brown & Paolucci, 1979); actions which can be used to fulfill the value standards (Brown, 1978; Brown & Paolucci, 1979; Coombs, 1984b); and consequences of alternative actions (Brown, 1978; Brown & Paolucci, 1979).

Function of Practical Reasoning

The function of practical reasoning is to solve everyday practical problems, i.e., the "what should I (or we) do?" or "what is best to do?" value questions (Brown & Paolucci, 1979). These are questions facing individuals and groups, such as families, organizations or governing bodies. Individuals have to decide what to do with drink bottles after they are finished with them, while families have to decide what to do about helping children decide what is best to do with drink bottles, and city or state governments have to decide what to do to control litter.

Structure of Practical Reasoning

Practical reasoning, in its simplest form, involves deciding what to do and believe. In other words, practical reasoning is continuously judging — questioning, testing, evaluating, first, what is best to do and believe as facts and value standards are brought together for examination and deliberation, and finally, what potential action or course of actions should be selected.

When practical reasoning is analyzed further, practical reasoning is far from simple. It is a complex higher thinking process including creating, judging, dialoguing, and deciding. Each of these dimensions is itself complex and seems to occur alternately and continuously with the others. When using such high level thinking abilities, individuals process information beyond superficially memorizing or recalling information. In addition, knowledge and positive attitudes toward reason are necessary for sound reasoning to take place. These practical reasoning learnings appropriate for home economics curriculum are outlined in Figure 1.

Knowledge for Practical Reasoning

When individuals or groups are faced with a what to do question or problem, practical reasoning begins. To solve any problem, practical reasoning requires an accessible and extensive knowledge base (Laster, 1985). Because home and family problems in real-life are unstructured, family members must gather adequate reliable information for practical — what to do — conclusions (or judgments). This information forms the basis for reasons or premises on which judgments or decisions are grounded in everyday, informal reasoning.

For sound, justifiable decisions to be made, the information must be reliable and reasonably adequate, not incomplete. Probable consequences of alternative actions chosen must indicate that the action selected is workable for the situation and morally acceptable; that is, actions must not affect anyone adversely and must provide the greatest benefit to all concerned. Because individuals may reason from different bases, depending upon their knowledge base and creative thinking ability, practical reasoning may result in many justifiable answers to practical problems or issues.

For practical reasoning concerning home and family problems, home economics concepts are needed. In addition, second order thinking concepts are needed. These second order concepts are used to think about our value concepts, rules, and judgments (Coombs, 1984b): Nature of practical reasoning, vocabulary of practical reasoning (Coombs, 1984b; Scriven, 1985), standards of reasoning (Coombs, 1984b; Ennis, 1985), and logical and heuristic rules for solving problems (Perkins, 1983). Students can use the second order concepts to monitor their own thinking. Such monitoring appears to be a distinguishing characteristic of "good" problem solvers (Laster, 1985).

Complex High Level Thinking Processes

In addition to a knowledge base, a good practical problem solver needs high level thinking process proficiencies. These thinking processes include specific creative thinking, critical thinking and decision making processes. Good problem solving and reasoning require both creative and critical thinking (Yinger, 1980).

Creative or imaginative thinking is necessary to construct all the reasonable alternatives, dimensions of the situation affecting one's decision, and the consequences of the alternative actions. Imagination is also necessary for dialogical thinking; that is, empathizing with and constructing the frame of reference of others (Paul, 1985) and the many sides of issues. Creative thinking is necessary for conceptualizing all the knowledge needed to make a sound decision. Conceptualization involves organizing the extensive **unorganized** information into usable concepts of contextual factors, alternatives, consequences, value standards and arguments (reasons) supporting the many sides of issues.

Critical thinking is often equated with practical reasoning. As a central dimension in the practical reasoning process, critical thinking involves continuously and reflectively assessing (1) information accuracy and reliability (Ennis, 1980, 1985; D'Angelo, 1971; Johnson & Blair, 1980) and (2) the acceptability of criteria and actions (Coombs, 1984a,b). Value analysis and moral reasoning are required for judging the acceptability of actions, (Coombs, 1984b; Coombs & Meux, 1971).

Finally, **decision making** is a necessary higher level thinking dimension of practical reasoning. In practical reasoning, problem solvers must choose among alternative actions, means, or choices by comparing alternatives and evaluating information about those alternatives in terms of criteria.

Cooperative Dialectical Processes

While knowledge and higher level thinking processes are necessary, they are not sufficient for sound practical reasoning. Knowledge and these thinking processes depend on **dialogue and dialectical interaction** with others and with ourselves. Such empathetic dialogue is needed to gain the extensive knowledge and the frame of reference of others which is so necessary for decisions that are based on a consideration for the well-being of self and others. Friends, family members, department staff, community members, government agency staff and legislative members must use this process to gather adequate information on which morally acceptable decisions can be made. Such morally acceptable decisions are most necessary today in our complex interdependent world community.

Positive Attitudes Toward Reason

Finally, positive attitudes toward reason are also essential for practical reasoning. Without the willingness to reason with others, sensitivity to morally hazardous actions and long term consequences of actions on others, and the tendency to undertake practical reasoning, good practical reasoning would not occur. Such tendencies to notice and act compose another important dimension of practical reasoning which presumably can be learned and changed.

Summary

These interacting and overlapping practical reasoning dimensions comprise the necessary learnings for morally defensible decisions when solving practical home and family problems. Considering this practical reasoning model, a comprehensive home economics curriculum would include home economics knowledge **and** practical reasoning concepts, such as standards for rational and moral thinking, high level thinking skills, cooperative interaction skills, and positive attitudes toward reasoning and people.

Instructional Strategies for Developing Practical Reasoning

If we take on the challenge of teaching practical reasoning in our programs, how should we help our students develop it? Several standards must be met to effectively enhance this complex everyday-living thinking ability:

1. **Expectations for developing practical reasoning are clear to students.** Students are more likely to learn when they know what they are expected to learn and why.

2. **Learning conditions for a complex skill are provided.** Good cognitive skill development, like good motor skill development, requires conceptualizing the procedures and standards of good performance, as well as practice and feedback (Anderson, 1980; Laster, 1985). Skill development proceeds most efficiently when mediated by a knowledgeable and skilled coach-educator, whether that educator is a parent, chef, expert seamstress, home economics teacher or professor. Depending upon the developmental level and needs of students, a guided prompted strategy or a guided discovery strategy may be used.

3. Since practical reasoning is necessary to survive in an uncertain future environment, **key features of a survival training environment**, like that created by NASA, **need to be provided** (Scriven, 1985):

   a. Careful supervision of coping efforts so dangers are minimized (including dangers to self-concept);

   b. Constructive demonstrations and suggestions for ways to handle problems; and

   c. Enough reality to transfer coping skills to real situations in the future.

4. **The realities of everyday home and family problem solving are reflected in the learning environment.** Transfer of learning is most likely if the tasks that are practiced are like those that will be encountered (Thorndike, 1913). In this case, home economics students will most likely solve the practical problems they encounter in everyday life with good reasoning if they have experience solving simple **and** complicated, messy, and stubbornly persistent what-to-do home and family problems using good reasoning, **and** conceptualizing their problem solving process through reflection and insight.

5. **Individual learning styles and developmental needs are accommodated.** While students learn best in learning environments which comfortably **match** their individual learning styles, students' reasoning abilities develop in learning environments which are more complex than their own current abilities (Joyce & Weil, 1980; Schroder, 1975). Thus, for developmental needs to be met, students' intellectual developmental level and their learning environments need to be **mismatched** — with less structure than students would prefer.

Alternative Instructional Strategies

How should teachers incorporate practical problem solving and reasoning into home economics programs? Several alternative instructional strategies or models have been proposed to develop thinking skills:

1. Have a separate instructional program;

2. Integrate thinking skills informally into existing subject matter-focused programs by the questions, and example educators provide;

3. Directly teach the individual component skills of the thinking processes needed; or

4. Use an integrated holistic skill development strategy.

While each of these strategies has advocates, the integrated holistic skills development strategy would probably be most successful for such complex higher level thinking skills, like practical problem solving and reasoning. This strategy meets the standards outlined in the preceding section and incorporates what we currently know about human information processing, social interaction, effective instructional practices, and theory and research regarding transfer of learning.

While attention is being given here to teaching practical reasoning in secondary consumer-homemaking programs, this strategy is equally appropriate for enhancing practical reasoning in secondary or post-secondary occupational and higher education home economics programs, and is certainly appropriate for parents to use in enhancing their children's practical reasoning abilities.

Holistic Integrated Skill Development Strategy

What specifically might a teacher do to implement requirements for teaching practical reasoning in the classroom? Teachers can use **the four interrelated skill development strategies** to help home economics students develop their practical problem solving and reasoning skills: model "good" practical reasoning, teach a practical reasoning concept development unit, integrate practical reasoning throughout the program, and provide a supportive learning environment.

I. **Model "Good" Practical Reasoning.** First, teachers need to **understand and use "good" practical reasoning: Be a "good" role model!** This includes:

- Seeking ways to understand and improve their own reasoning.
- Questioning, scrutinizing — while showing concern for the well being of self and others.
- Seeking adequate, reliable information.
- Evaluating information — is it accurate, reliable, reasonably complete for needs?
- Giving reasons for own judgments, decisions.
- Showing consideration for the consequences of actions on others — now and in future.
- Monitoring the quality of their own and others' reasoning. Being sure conclusions/decisions/judgments are based on rational and moral standards (values or criteria).

II. **Teach Practical Reasoning Concept Development Unit.** Secondly, **teachers need to teach a practical reasoning concept development unit** (Table 1, pp. 52-53). This may take the form of an advanced organizer unit at the beginning of the school year or semester, so students know "good" reasoning is expected of them, and the reasons for developing good practical reasoning abilities. This unit is the first stage of the skill development strategy; the development of the concept of practical reasoning and its essential components, including the standards for students to use in evaluating their decisions and judgments.

III. **Integrate Practical Problem Solving and Reasoning Throughout Program.** Thirdly, teachers can **integrate practical reasoning throughout the home economics program by helping students solve a range of uncertain practical problems** (Table 2, pp. 54-55). This involves 1) providing practice in solving routine and generally uncertain practical home and family problems, 2) engaging students in genuine, "good" practical reasoning about uncertain practical problems, and 3) mediating students' learning about thinking. By posing real or realistic simulations of home and family problems, students have the opportunity to develop their practical reasoning concepts and skills.

Practice is needed to help students 1) conceptualize the concept of practical reasoning so it can be used when needed and 2) develop skills. Just as practice is needed to identify and decide what to do to solve other types of problems, practice is needed to solve practical problems. Practice in solving personal uncertainty problems as well as general uncertainty problems is needed (Beyth-Marom & Dekel, 1985). (See Figure 2, p. 55):

- Personal uncertainty practical problems
  (What to do questions which someone can answer with certainty, but inexperienced or unknowledgeable individuals may not be able to answer with certainty)
- General uncertainty practical problems
  (What to do questions which no one can answer with certainty)

Table 1. Practical Reasoning Concept Development Unit

A. Planned curriculum component with cognitive objectives [not to be confused with Bloom's cognitive objectives] (Laster, 1985)

Designed to help students develop the concepts and cognitive processes needed to think about thinking

B. Practical reasoning concepts

Second order concepts used to think **about** value concepts, rules, and judgments used in thinking (Coombs, 1984b)

1) Function of practical reasoning
2) Nature and structure of practical reasoning
3) Arguments for and against practical reasoning
4) Methods of practical reasoning
   a) Decision making
   b) Conceptualization
   c) Dialogical thinking or perspective taking
   d) Information accuracy assessment
   e) Value analysis
   f) Moral reasoning
   g) Informal logical inquiry and reasoning
5) Nature and kinds of value concepts
   a) Nonmoral value concepts
   b) Moral value concepts
6) Nature and kinds of claims, e.g.,
   a) Truth or factual claims
   b) Value claims
7) Standards for judging quality of reasoning (Coombs, 1984b; Ennis, 1980, 1985)
   a) Desirability of alternative actions (Coombs, 1984b)
      (1) Best consequences/greatest benefit to achieve good (ideal)
      (2) Moral acceptability based on fundamental principles and basic rules of social moral beliefs, not just personal moral beliefs
      (3) Precedence of moral acceptability standard over greatest benefit/best consequence standard
   b) Adequacy and reliability of information used in reasoning (Coombs, 1984b; Ennis, 1980, 1985)
      (1) Reasonably comprehensive
      (2) Credibility of information source
      (3) Reliability of observations
   c) Informal logical reasoning (Coombs, 1984b; Ennis, 1980, 1985; Perkins, 1983, 1985a, 1985b)
8) Practical problem solving and reasoning process heuristic (See Table 1, p. 37, for heuristic, defined.)

   When a practical, what to do, question arises,
   a) Ask self and others these decision making questions, as needed:
      (1) What is the basic problem?
      (2) What information do I/we need to solve this problem?
         (a) What criteria — values, goals — to judge choices — decide what to do?
         (b) What situational — personal and environmental — factors do we need to consider to solve this problem/answer this question?
         (c) What alternatives/choices?
         (d) What are the probable consequences of alternatives?
      (3) Which alternative action is best considering values, goals — criteria?

b) Reflect and evaluate — throughout decision making process:

(1) Is this solution a good one?
Is my decision/conclusion justifiable?

(a) Do I have **facts** to support my/our decision?

(b) Are my sources of information **reliable**? Why?

(c) Do I have enough **relevant information**?

(d) What will the **consequences of my solution/action be for the well-being of myself and others**?

- What if everyone acted this way or selected this solution? (Universal test)
  If I were the people affected by this solution/action, how would I feel about this solution/action? (Role reversal test)
- Would I do this same thing in a new or another situation? Why or why not? (New situation test)
- How can I better prepare myself for this or a similar situation?

Table 2. Integration of Practical Problem Solving and Reasoning Throughout the Home Economics Program

Infuse practical reasoning throughout the home economics program: Secondary or higher education program

A. Provide practice opportunities
   1) Pose range of uncertain practical home and family problems: personal and general controversial questions
   2) Solve practical problems, individually and cooperatively in groups

B. Engage students in genuine, "good" practical reasoning
   1) Ask practical reasoning decision making questions — to monitor **critical** thinking:
      a) What is the problem? How should we go about solving this question?
      b) What information do we need to solve this problem and support potential action/decision?
         (1) Contextual factors — situational factors?
            (a) Personal factors: goals, values? resources: skills, knowledge, money, time, perspective?
            (b) Environmental factors: values/laws/rules of family? school? state? nation? resources? cultural customs? taboos? relationships?
         (2) Alternatives/choices?
         (3) Probable consequences of these alternatives/choices?
            * (a) For self — short term? long term?
            * (b) For others affected by actions? e.g.,
               * Family — short term? long term?
               * Community members — local, national and international?
      c) Which alternative action is best? Justifiable?
         *(1) Adequate, reliable information?
            * (a) Reasonably comprehensive for situation?
            * (b) True, accurate?
            * (c) Credible information? sources?
         *(2) Desirability of alternatives?
            * (a) Has best consequences for me/us, family, others affected by my/our actions?
               * What would happen if everyone made this choice? (Universal test)
               * How would I like to be the other person(s) affected by this decision? (Role reversal test)
               * In a similar or different situation, would this choice still be best? (New cases test)
            * (b) Morally acceptable to self and society?
               * Have the rights of all people involved been considered equally?
               * Impartially?
               * Will relationships be enhanced?
         *(3) Workable, feasible, considering personal and environmental factors in this situation?
      *d) What reasons/arguments support claims: conclusions, decisions, value stand?

2) Ask questions that monitor **creative** thinking:

   a) See and encourage students to seek or create adequate, sound alternatives, e.g.:
      (1) Even though this alternative 'sounds good to me/you', are there other ways this problem might be solved?
      (2) Let's **create** a solution that meets our standards for a good solution.

   b) Use and encourage students to use dialogical thinking: empathizing with others and constructing the perspective or frame of reference of others (Paul, 1985), e.g.:
      (1) How might s/he feel?
      (2) What might s/he believe about . . .?

C. Mediate students' learning about thinking

*Questions which mediate learning by calling attention to important standards for rational and moral judgments.

While adults may have the knowledge and reasoning skills to solve what seem to them to be **simple, routine home and family problems,** adolescents and children lack the formal and informal (tacit) knowledge and reasoning skills to answer these questions. Such routine questions include what clothes to wear, what to eat, and what to do to maintain a living environment.

Both adult and young people face **general uncertainty individual and family questions.** These general uncertainty questions are often perplexing, and sometimes controversial: What should I do with my life? Should I marry? Whom should I marry? What should be done about homeless families? What should we do to help terminally ill family members? What should we do to resolve this conflict?

Figure 2. Uncertainty and Practical Problems

Certainty problems	Personal uncertainty problems	General uncertainty problems
(Complete confidence in single answer to question)	(Someone knows answer to question)	(No one knows answer to question)
Routine practical problems		New, novel or controversial practical problems
(What to do questions students can answer with complete confidence)	(What to do questions which someone can answer but which students may not be able to answer with certainty because of lack of knowledge or experience)	(What to do questions no one can answer with certainty)

Grappling with problems such as these provide rich learning experiences for adults and youth. There is considerable evidence that "controversy can arouse conceptual conflict, and promote transitions from one stage of cognitive and moral reasoning to another (and) increase the creativity as well as the quality of problem solving" (Johnson & Johnson, 1979, p. 57). Controversial issues seem to be required for critical thinking to be stimulated. "Critical thinking is coping with controversy. That's the basis for its value and the nature of its approach" (Scriven, 1985, p. 12).

While educators and learners may be uncomfortable solving problems with no "right" answers, "comfort at the cost of reality is no virtue" (Sternberg, 1985b. p. 278). Real problems, like those found on the front pages of community newspapers (such as what to about homeless families who have no place to live while a parent is trying to find work, or what to do about fruits and vegetables if it were thought that the food had been exposed to radioactive fallout), motivate students to seek information that can be useful in the future as well as in developing their reasoning skills.

Engaging students in genuine, "good" practical reasoning about controversial practical problems becomes possible when real problems are pursued. Practical reasoning discussions give students opportunities to hear the questions, standards for thinking, and concerns of a rational, critical and creative practical reasoner. **By asking questions, teachers can exemplify the creative and critical questions students need to ask to monitor their thinking** when faced with a practical home and family problem. These questions become their heuristic, or general rule, to use in solving uncertain practical problems (see Tables 1 and 2).

Through practical problem solving discussions, **teachers can ask questions and give information that can help students understand and use the standards of "good" practical reasoning.** To help students evaluate their own statements and the statements of others, teachers can ask, when appropriate:

- Is this a **factual claim** or a **value claim**?
- Is this **true**? What facts do we have? Can it be generalized to this situation?
- Where did this information come from? Is the **source credible**? That is, is the source
  - — experienced or educated in this area?
  - — known to have no conflict of interest or self-centered motives?
  - — thought to have a good reputation?
  - — known to have careful habits?
- Are these **adequate and reliable reasons** for your decision/conclusion?
- Is there enough **relevant** information to justify this decision? Is this information **relevant** or **irrelevant** — unimportant or inapplicable to this question?
- Will this choice of action be **feasible — workable**:
  - — safe?
  - — legal?
  - — financially possible?
  - — personally possible — appropriate skills, time, etc.?
  - — acceptable to others?
- Is this choice of action **morally or ethically defensible**? Will this be the best action for your well-being and the well-being of others? Now and in the future? Under what circumstances would this be morally acceptable?
- From this information, what can you **conclude**? Does this logically follow from the information you have . . . or the inferences you have made from the information you have?

Such scrutinizing questions reflect critical thinking. Rather than allowing students to blindly accept whatever is read or heard, teachers can show them how to critically examine ideas in ways that show respect and valuing of opinions, differences, and individuals themselves.

Throughout practical reasoning discussions, **teachers can mediate and help students understand their environment and the standards and concerns of the culture.** Students need adults who can coach, nurture, and mediate their thinking and dialoguing interactions with their environment. Through this interaction youth develop the practical intelligence necessary for survival (Feuerstein et al., 1980). Such a **mediation process** would involve:

- Giving and expecting students to give reasons to support the claims they make. Reasons should show concern that proposed action will benefit all those affected by the action and that the information is reliable and adequate.
- Reflecting on and articulating reasoning — generally "thinking out loud" so students can understand the reasons given and how they were determined — how conclusions were reached.
- Calling attention to important distinctions and questions that must be answered if judgments/decisions/conclusions meet standards for rational, moral judgments (Coombs, 1984a). (See starred questions in Table 2).
- Sharing concepts and information important for answering questions and resolving conflict and misunderstandings. This sharing may take the form of a phrase used to define terms, an explanation, a diagram, analogy, resources, lessons, or units.

  Students need personally meaningful concepts to use in solving home and family problems, especially (Brown, 1978):

  — **Home economics value/standard concepts principles**

  (e.g., nutritional, sanitary, functional, efficient, aesthetically pleasing, safe, nonpolluting, optimum development, well-being).

  — **Alternative actions/means/strategies for resolving family questions**

  (e.g., technical actions: child development strategies; food preparation methods; management strategies; family communication strategies; communicative actions: empathetic listening, dialogical thinking, dialogue interaction, conflict resolution/negotiation; and emancipatory action: information procurement methods, information processing learning strategies, value analysis, value reasoning, moral reasoning).

  — **Consequences of alternative actions.**

  — **Factors affecting potential consequences of actions**

  (e.g., human development stages and needs, available family resources; community resources and services, laws, cultural taboos and traditions).

IV. **Supportive Learning Environment.** Finally, teachers can provide a supportive learning environment. This may take the form of cooperative learning groups (Johnson & Johnson, 1975), matching students with their preferred learning media, helping students seek and obtain resources in the community or at home, and/or being an empathetic and enthusiastic listener.

Supportive strategies like these are most important because too much controversy and uncertainty creates stress and anxiety, interfering with learning. In order for controversy to be constructive, information must be accurately communicated, the climate supportive, feelings as well as ideas and information must be considered, conflicts defined as problems to be jointly solved, and similarities as well as differences recognized (Johnson & Johnson, 1979). In addition, care must be given to matching the learning environment to the cognitive developmental needs of students involved (Hunt, 1970; Joyce & Weil, 1980).

Summary

Practical problem solving and reasoning, i.e., critical and creative decision making resulting from cooperative dialectical communication processes, are critical for dealing with the realities of the future. Since "good thinking in one academic or practical area of endeavor does not guarantee good thinking in another" (Sternberg, 1985b), practical reasoning needs to be developed in home economics to help students solve routine and new, novel, and controversial home and family practical problems.

Practical problem solving and reasoning are not developed automatically by living in our culture or through traditional educational programs. Home economics is an ideal curriculum for enhancing the reasoning of students for the real world, and already we do much to prepare students for today and the future.

We do not have to throw away what we have. Much that we have in home economics instruction is quite good. We create supportive, nurturing classroom environments. We already present students with real and realistic simulations of real home and family problems. We help students develop a knowledge base which can be used to solve practical home and family problems.

But we can do more. 1) We can help students expand their knowledge base including developing the value-standards concepts they need to evaluate alternative home economics actions and their reasoning and problem solving decisions. 2) We can help them develop their concept of practical reasoning so they can think about, monitor, and control their problem solving and reasoning. 3) We can improve our own critical and creative thinking skills so we can be "good" practical reasoning models. 4) We can pose more controversial, novel home and family problems to develop their critical and creative thinking abilities. 5) We can engage students in more genuine, "good" practical reasoning discussions, and mediate their development of thinking skills by scrutinizing and coaching their practical reasoning questions and use of standards.

Students need direct and indirect help to develop rational and ethical thinking and actions. We can make a positive difference in the quality of home economics students' practical problem solving and reasoning.

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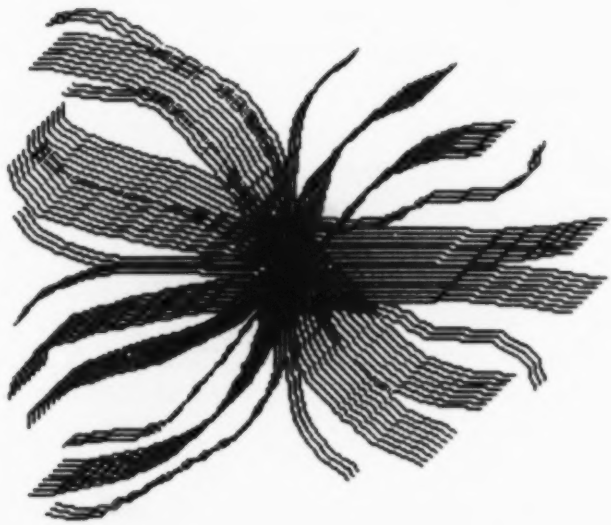

REFLECTIVE THINKING: MEANING AND IMPLICATIONS FOR TEACHING

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There is much focus today on teaching students "how to think." This has resulted from declining performance on various achievement tests, increasing remedial course work required at college level, and a general concern by the public for the quality of education received in relation to financial support provided. Many have attributed these failures to teaching **what** to learn rather than **why** we learn — which involves the thinking process. Reflective thinking is one of the models used in teaching inquiry as a process for thinking.

The values of reflective thinking are: (1) it makes action with a conscious aim possible; (2) it makes systematic preparations and creative inventions possible; (3) it gives meanings to things and, therefore, enriches them and (4) it provides added control.

Views on Reflective Thinking

John Dewey pioneered the concept of reflective thinking and referred to it as "being or as including critical thinking, problem solving, inquiry, and reflective judgment" (Dewey, 1938). Although Dewey espoused reflective thinking as an important aim of education, he was vague in defining the precise nature of reflective thinking. Problem situations, as noted by Dewey arise out of felt needs and present themselves to the consciousness of an individual. This awareness or consciousness is referred to as the pre-reflective stage. When neither the character of the problem nor the formulation of its solution is clear, in other words when uncertainty exists, then a real problem exists which requires reflective thinking. Reflective thinking, according to Dewey, begins with a real problem and ends with a judgment that provides a solution to the problem, and requires that the judgment be confirmed through an inquiry process that includes sound reasoning and information supported by evidence.

In analyzing reflective thinking, Dewey indicated that it includes observations made directly by the senses or through recollection of observations. Observations relate to what exists in nature. Observations also include suggestions which arise from possible courses of action or possible solutions. Suggestions provide a point of review that lead to new observations, recollections, and a reconsideration of observations already made to test the possible solutions. If the suggestions are not used to guide further observations, then reflective thinking has not been achieved.

Reflective thinking requires the use of data and ideas. Data (facts) form the material to be interpreted, explained, accounted for and deliberated. Ideas occur in the mind. Data and ideas come from observations (present and previous) and inferences. (Inferences deal with what is possible rather than what is actual.) The process continues with anticipation, supposition, conjecture, imagination, foresight, prediction, planning, theorizing and speculation. These processes indicate that reflective thinking focuses on the future. Every suggestion is anticipatory of the future and the solution expresses a definite partiality toward the future. Reflection also involves the

past by drawing on past knowledge and experiences. Dewey states, "reflection involves not simply a sequence of ideas, but a consequence — a consecutive ordering in such a way that each determines the next as its proper outcome, while each outcome in turn leans back on, or refers to, its predecessors . . . which become a train or chain" (Dewey, 1933, p. 4-5). In reflective thinking, units are linked in a continuous movement toward a common end or a conclusion. Dewey defines a belief as referring to "something beyond itself by which its value is tested; it makes an assertion about some matter of fact or some principle or law" (Dewey, 1933, p. 6). The assertion may affirm or reject the fact, principle or law. Dewey further states, "Active, persistent and careful consideration of any belief or supposed form of knowledge in the light of the grounds that support it and further conclusions to which it tends constitutes reflective thought" (Dewey, 1933, p. 9).

Dewey identifies five phases or aspects of reflective thinking between the pre-reflective stage and the post-reflective stage. The pre-reflective stage "sets the problem to be solved; out of it grows the question that reflection has to answer" (Dewey, 1933, p. 107). In the post-reflective stage the doubt is dispelled and the final situation evolves. The five phases of reflective thinking identified by Dewey are "(1) **suggestions**, in which the mind leaps forward to a possible solution; (2) an **intellectualization** of the difficulty or perplexity that has been **felt** (directly experienced) into a **problem** to be solved, a question for which the answer must be sought; (3) the use of one suggestion after another as a leading idea, or **hypothesis**, to initiate and guide observation and other operations in collection of factual materials; (4) the mental elaboration of the idea or supposition as an idea or supposition **reasoning**, in the sense in which reasoning is a part, not the whole, of inference; and (5) testing the hypothesis by overt or imaginative action" (Dewey, 1933, p. 107).

In the first phase, the natural response is to take action. However, complex situations require time to generate and consider more than one suggestion. The second phase, intellectualization, involves the process that leads to knowing what the problem exactly is and this occurs simultaneously with getting insight into finding a way out of the problem and getting it resolved. "Problem and possible solutions stand out completely at the same time" (Dewey, 1933, p. 108).

The third phase, guiding the idea or hypothesis, involves defining difficulty, which gives a better idea of the kind of solution that is needed. The data sets the problem staging and as insight into the problem modifies and expands the suggestion, it becomes a definite supposition, or a hypothesis.

The fourth phase, reasoning, involves narrowing, which limits reviewing the observations, ideas, suggestions, and hypothesis, as well as extending knowledge by the degree of openness to ideas, suggestions, data and hypotheses. Reasoning deals with consideration of the consequences of adopting an idea, suggestion or hypothesis. The consideration is hypothetical or conditional.

The fifth phase, testing the hypothesis, involves experimental corroboration or verification. If the experimental results agree with the theoretical or rationally deduced results, then there is confirmation of the conclusion. Verification may not always follow and sometimes consequences do not confirm the hypothesis, so new ideas and hypotheses need to be pursued.

The sequencing of these phases is not fixed and does not proceed in a set order. However, in scientific investigations, the methodology is more formal and, therefore, more established. But with practical deliberations, the process is more informal and flexible.

Baron (1981) proposed an update of Dewey's theory of reflective thinking. He proposed a general normative (prescriptive) model of the phases of reflective thinking. Each phase has a governing parameter and a rule for setting the optimum value of that parameter. The parameter deals with biases and may be used to evaluate individual differences. The rules deal with the correctness of thinking and concern the weighing of values. In summary, Baron's relabeling of Dewey's phases and governing parameters and their optimum value are as follows:

Phase 1	Problem Recognition		
	parameter	—	tendency to recognize problems
	rule	—	set to maximize the ultimate expected value.
Phase 2	Enumeration of Possibilities		
	parameter	—	the number of possibilities generated before any evidence is considered
	rule	—	set to maximize expected value. The value may depend on the standard of evaluation.
Phase 3	Reasoning		
	parameter	—	better to select evidence that provides more "information" in some sense
	rule	—	set to allow evidence to be selected (once again) to maximize the expected value and according to kind of possibility being evaluated.
Phase 4	Revision		
	parameter	—	list of possibilities revised on basis of evidence
	rule	—	strengths are analogous to probabilities as relative frequencies.
Phase 5	Evaluation		
	parameter	—	determines how soon one stops thinking relative to optimum
	rule	—	set to cease working on a problem when the expected value would be reduced by continuing to work.

Baron believes establishing parameters increases one's tendency or propensity to consider them. For example, to tell someone to list more possibilities before evaluating a particular possibility increases the likelihood that one will function in this way as a general rule. Also, propensities are teachable but capacities are not. This approach may reduce the tendency for impulsiveness, rigidity and stereotyping. Additionally, it provides a behavior model that may yield transfer of this learning to other situations.

More recently, in the 1980s, Karen Kitchener and P. King (1983) have attempted to provide a more definite and concrete interpretation of Dewey's concept of reflective thinking. They have identified a seven stage sequence which leads to reflective judgment, based on a related network of assumptions about knowledge and reality. They review reflective judgment as the highest stage of the model (stage 7). A detailed description of each stage is presented below:

Stage 1
- involves a belief that knowledge is direct and immediately known
- views reality and knowledge as mirrors or copies of the other
- considers that "what is preconceived" and "what is" correspond absolutely
- sees beliefs as requiring little justification since "what is observed is 'true' "
- is egocentric, single category belief system.

Stage 2
- involves a right/wrong view
- views authorities as possessing absolute knowledge
- believes that objective reality can be known with certainty by those with domain of authority, but not by everyone
- perceives that when answers do not exist or can not be learned via observation, beliefs can result from copying views of authorities
- believes that "some things are right" and "others are wrong"
- involves a two category belief system
- involves a right, wrong and uncertain view.

Stage 3
- acknowledges truth may be temporarily inaccessible even to legitimate authorities
- realizes authorities sometimes disagree
- believes that no one can claim to know until truth results from concrete data sometime in the future
- thinks that during the interim, beliefs can be justified on the basis of what "feels right" or what one "wants to believe"

- involves right, wrong, uncertain, alternative concepts of reality, views, theories
- recognizes a problem deals with real uncertainty and this uncertainty itself initiates this stage.

Stage 4
- involves a belief that there is an objective reality, but it cannot be known with certainty because of concrete/specific reasons (event happened too long ago)
- acknowledges many possible answers to questions
- views knowledge as idiosyncratic to the individual, i.e., what is true for one may not be true for someone else.

Stage 5
- involves abandoning belief in an objective reality
- considers that beliefs are related to a particular context or domain because rules and perspectives differ by context or domain
- sees knowledge as uncertain and problematical
- views that judgments are based on subjective interpretations of the world and do not lead to objective knowledge
- involves the beginning of an understanding of inquiry as a process
- involves the initiation of the ability to evaluate subcategories or elements of an argument, e.g., views of an educator versus a scientist
- involves learning to weigh and evaluate arguments according to a set of rules
- involves assessing positions as to weaker or stronger in determining the final judgment
- moves beyond idiosyncratic justifications of the previous stage.

Stage 6
- considers objective knowledge impossible to attain since knowledge is based on subjective interpretations of data
- considers some judgments are better grounded than others
- views principles of inquiry as applied across contexts rather than to specific contexts
- involves ability to see relationships and to evaluate between and across subcategories in different domains.

Stage 7
- assumes knowledge is the ultimate product of reasonable and rational inquiry
- views outcome of inquiry as an approximation of truth
- assumes reality exists which can be used in accepting or rejecting probable suggestions, hypotheses or conjectures
- believes it is possible, using the inquiry approach, to determine some hypotheses or judgments more acceptable than others
- considers that beliefs become justified through the rational inquiry process
- views inquiry as an ongoing process
- allows more definitive judgment
- recognizes that knowledge claims need to remain open to review, reconsideration and reevaluation
- provides further differentiation and consolidation of rules of inquiry, as well intercoordination of complex categories of reality and knowledge
- indicates end of reflective process, which involves a judgment that identifies as solution to a problem or temporarily closes the issue
- referred to as "grounded assertion" or "warranted assertion" which requires substantiation by valid reasoning, sometimes called judgment stage.

Why Teach Reflective Thinking?

What is the value of information about reflective thinking to educators? Educators are concerned with teaching others to make effective application of knowledge. People want to learn how to develop their ability to use knowledge effectively in the practical, everyday affairs of life. This ability requires development of exact reasoning, judgment, and creative and manipulative thinking skills. Exact reasoning relates to thinking that leads to conclusions that are known to be correct and can be verified. This kind of thinking is referred to, by Dewey, as pre-reflective thinking and is identified as stages one and two of Kitchner and King's seven stage reflective thinking/judgment model. Most exact reasoning is found in the quantitative science fields, such as math, accounting, physics, chemistry, astronomy, mechanics and genetics. This type of thinking is often used in specific occupations, has made possible the rapid progress of society, and will influence future scientific advancement. These thinking abilities are less used in everyday life, but are important. Some examples in home economics include the balancing of diets with precision, as done by nutritionists, determining the appropriate kind and amount of shortening in food products, and adjusting clothing patterns for different body sizes and shapes.

Judgment thinking, or reflective thinking, which represents stage 7 and previous stages of the Kitchener and King reflective thinking/judgment model is used frequently in daily work and in the practical, everyday affairs of life. One cannot determine quantitatively the selection of the right life partner, or the best consumer decisions related to goods and services. This thinking involves the relative quality or value of any product, service or act in relation to particular standards or criteria which guide the thinking during the judgment process. This type of thinking deals with the inexact as opposed to the exact. The judgment or outcome is believed to be correct, based on evidence. However, the outcome cannot be proven or guaranteed because the basis used for the decision is subject to the special judgment abilities or qualifications of the individual. Also, one cannot know the future consequences of current judgments. Therefore, a judgment leads to a conclusion that is indefinite and, thus, not known to be correct. However, the highest stage of reflective judgment is not guesswork; it is based on an inquiry process. Inquiry leads toward truth even though the process may be constrained by the limited availability of data and the inquirer's accuracy of perception of reality and information. Inquiry is characterized by the interactions between and among ideas, reasons and facts.

An illustration of the seven stage sequence of reflective thinking applied to a concept area taught in home economics, maternal and infancy nutrition and health, is presented below:

Stage 1 believes that women should avoid pregnancy after age 40, due to concern for potential health risks to baby and mother.

Stage 2 views that it is wrong to potentially jeopardize the health of the baby by giving birth after age 40.

Stage 3 realizes that professionals with expertise in maternal and infant health disagree on potential level of risk of pregnancy after 40.

Stage 4 views that individuals vary in their nutrition and health status which may be one of influential factions related to degree of potential childbirth risks after age 40.

Stage 5 considers that knowledgeability of the mother about personal health care and nutrition during pregnancy along with her willingness to make a commitment to proper nutrition and health care will enhance the potential maternal and infant health status.

Stage 6 sees relationship between potential health of baby and the present and past nutritional and health status of the mother.

Stage 7 assumes responsibility for learning about proper nutrition and health during one's lifespan.

An ERIC (Educational Resource Information Clearinghouse) search revealed the following educational applications of reflective thinking/judgment:

- incorporation of reflective thinking as an integrative aspect of teaching
- provision of seminars and field experiences on reflective thinking as a component of pre-service and in-service programs
- exploration of the function of reflective thought in dialogic learning
- teaching of reflective planning skills in writing
- use of case studies as a technique for teaching the reflective thinking process
- survey of high school teachers' perceptions of factors inhibiting reflective thinking in schools
- exploration of relationships of intellectual development and reflective thinking
- examination of the value of reflective thought in classroom drama
- use of self reflection as a clinical supervision method
- study of intellectual development in the college years in relation to reflective judgment development
- study of intuitive and reflective processes in mathematics
- examination of relationship between major, year in college, academic performance and reflective judgment
- implications of reflective judgments for career counseling
- relationship between reflective thinking and survival and vocational activities
- study of teacher training's tradition of lack of provision in the curriculum for reflective thinking
- use of reflective decision making in multicultural education
- use of questions in the classroom to achieve reflective thinking
- use of take-home exams to develop reflective thinking
- using reflective thinking as a technique in conflict management
- utilization of reflective teaching strategies for teaching social studies
- development of reflective judgment in adolescent and adult women.

One of the chief reasons that educators fail to teach reflective thinking/judgment is because they rarely provide students with the opportunity to judge their creations or products. Instead, the educator judges what the student produces. Students are not taught how to distinguish an acceptable product from an unacceptable product. They are not taught how to develop their ability to do reflective thinking. Instead, students work blindly and become accustomed to failure and lose interest in learning. Students cannot learn the reflective process by reading about it; they must have experience in trying to perform it. Sometimes educators are so eager to provide reflective thinking experiences that they replace real life experiences with artificial school laboratory type of experiences. Concrete, real life problems and experiences must be provided that gradually require more difficult and complex reflective thinking. As students practice reflective thinking, they will develop this ability. As their knowledge and experiences expand, this ability becomes more meaningful. As they develop the ability to perceive the quality of their judgments, the quality of their judgments and work will improve.

Another reason educators fail to teach reflective thinking is that limited preliminary effort is made to arouse the interests of students. Also, students are often asked to read about the standards and criteria before performing the judgment process, so they are more likely to not think for themselves, and to accept the authority position without real understanding of the standards. Actual experience and opportunities to think for themselves need to be provided for students.

Also, students are allowed to guess or estimate the best answer without focusing on in-depth experience with the inquiry process and without being required to document their process of inquiry. Without focus on the inquiry process, students miss development of the ability they are striving to acquire.

Practice in reflective thinking generates creativity. Through practice, students learn to recognize and identify more alternatives and to draw better inferences from known facts. Also, it provides practice in testing the alternatives and hypotheses and identifying the best solution. Each of these experiences is essential to creative thinking.

Practice in reflective thinking also enhances the thinking essential to development of manipulative abilities. Reflective thinking experience will generate greater insight into new and ingenious approaches to manipulating processes and materials. Also it will assist in creating a better quality finished product, as well as a more efficient and effective product.

Reflective thinking is not a panacea for education. Reflective thinking is simply a type of higher order thinking skill that, if developed, enables individuals to experience an enhanced quality of life. Reflective thinking experiences can readily be incorporated into home economics classes. The critical factor resides in teachers' ability and desire to conduct their classes in a manner that generates active thinking.

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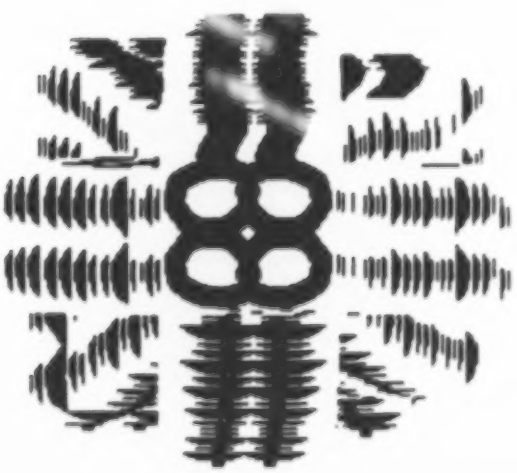

THE MEANING OF HIGHER ORDER THINKING AND ITS IMPLEMENTATION IN HOME ECONOMICS EDUCATION

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The purpose of this chapter is to tie together what has been said about the meaning of higher order thinking skills and strategies for teaching them, to identify general themes that appear across articles, to identify some implications emerging from the articles, and to draw conclusions and make recommendations for teaching thinking in home economics at various levels. An analysis of the term, higher order thinking, as a slogan term will be presented as a way of summarizing the problems and solutions regarding the teaching of thinking that have been discussed.

Higher Order Thinking Skills as a Slogan

The term, higher order thinking skills, is frequently used in discussions about education as a slogan and, as such, produces the meaning and over simplification problems Daines and Anderson point out in their articles. Slogans are brief, attention-getting phrases, selected, defined and justified to gain widespread acceptance. For example, who could be against higher order thinking skills? Slogans are useful for these two purposes, attracting attention and generating supportive opinion, but they are not helpful for understanding ideas or in implementing them.

Slogans are Chosen to Express and Reflect Interests Represented in Public Opinion.

Higher order thinking skills is a term that reflects current public opinion concerning education that focuses on the quality of education, excellence, the basics, and academics. The term also reflects technological developments that are creating demands for information processing capability.

Slogan Terms Lack a Precise Meaning and Are Typically Used Without Reference to the Tangible Events or Things That They Might Represent.

For example, when one stops to think about it, it is hard to say with any assurance what a person discussing higher order thinking skills is actually talking about. This characteristic of slogans is apparent in the example reported by Daines of the conference planning group who attempted to explain the meaning of the term, thinking skills, and gave up in the end, using the term as it is — a slogan without concrete examples or precise meaning. Another example of this characteristic of slogans is reflected in the careful attention given by Janet Laster to explaining the meaning of terms she is using and, yet, when coming to the term, higher order thinking, its meaning nevertheless remains somewhat elusive. Laster defined higher order thinking skills as purposefully processing information beyond superficially memorizing or recalling information. Interestingly, this definition says more about what higher thinking skills are not than what they are, again reflecting the slogan characteristics of the term.

Slogans may appear more frequently in fields or around issues where knowledge is limited, and where concepts are not clear.

Slogans are Usually Associated With a Broad Range of Ideas and Situations.

For example, the term, higher order thinking skills, is used by policy makers in statements concerning educational policy. It is used by educators in relation to educational methodologies and curriculum. It is used by teachers to express instructional goals and intended outcomes for student learning. It is associated with a wide range of subjects including mathematics, science, social studies, art, and home economics, and with all levels of education, including early childhood, K-12, post secondary, adult and higher education. It is also frequently mentioned as needed for work, citizenship, and survival and functioning in a future society. This tendency for slogans to be associated with many diverse circumstances and experiences is reflected in the range of issues addressed by the articles contained in this document, a range which includes gender issues, communication issues, intellectual functioning, home and family life, reading and writing, etc.

Slogans Take on Private, Individual Meanings Which Vary Considerably Across People.

What one person means when they use the term, higher order thinking skills, may be quite different from what another person means. This characteristic of multiple meanings is reflected in the range of focuses represented in the articles included in this document which concern critical thinking, problem solving, reflective thinking, comprehension, creativity, etc. Further, several articles talk about the same concept or idea but focus on a different aspect of it. Since the authors are, in general, careful to explain the meanings they intend for terms they use and also illustrate intended meanings by examples, their focusing on different aspects of the same concept is useful in elaborating meaning for higher order thinking.

Since meanings associated with slogans tend to stay private because they are usually not stated, the wide range of viewpoints necessary for an adequate understanding of the concepts associated with a slogan are typically not uncovered. For example, what the math teacher means by higher order thinking skills may be somewhat different than what the home economics teacher means by higher order thinking skills but these differences are not likely to be discovered because the meanings are unlikely to be stated. Daines speaks to this problem by urging that users of the term, higher order thinking, "unpack" its meaning. Anderson also speaks to this problem by suggesting that it is not enough to simply think about higher order thinking skills as a universal set of skills experienced in the same way by all people.

Slogan Language Appears to Guide Practice But, in Reality, Offers Little Real Help in Translating Ideas into Action.

One reason that this is the case is because slogans imply that implementation of an idea is a simple, straightforward matter when, in fact, it is not. For example, problems and questions become immediately apparent to the person trying to incorporate higher order thinking skills in their teaching but little help is provided by the slogan for answering the questions or dealing with the problems. What often happens is that ideas get seriously distorted in the process of translating them into action and what is implemented as "higher order thinking" may be quite different from what was intended or meant by the original user of the term. The absence of examples of what an idea looks like when implemented that is characteristic of slogans contributes to this problem.

Moving Higher Order Thinking Skills Beyond a Slogan in Home Economics Education

The articles in this document contribute to moving beyond the slogan, "higher order thinking," to an understanding of thinking processes and to examples guiding the implementation of higher order thinking in home economics instruction. The examples the authors present of actual teaching sequences and lessons that involve students in thinking contribute both to understanding and guiding practice.

There are common themes in the articles which suggest that the authors share some common meanings for higher order thinking skills, further evidence that the discussions move beyond slogan terminology. For example, the need for students to experience and internalize thinking skills in order to understand and use them was expressed in several of the articles. A second theme is the need to focus on real life problems in teaching thinking. A third theme is the value of peer teaching and interaction between students in the learning process. A fourth is the importance of becoming conscious of one's own thinking processes in developing thinking skill. A fifth theme is the opportunities for and necessity of creative thought in higher order thinking.

In addition to the common themes reflected across several papers, each paper contributes unique insights concerning educating for thinking in home economics. Jeanette Daines' article urges home economics educators to identify tangible meanings for higher order thinking skills that are relevant to home economics. She provides useful guidance for this task. Daines suggests that there is a gap between what is said about the importance of thinking skills in the school curriculum and the society at large, and behavior patterns observed in schools and the larger society and underlying values the patterns reflect. She implies that change in the priorities of teachers, school administrators and society is needed if we are really serious about implementing teaching for thinking as a goal of education, and that such change may be somewhat uncomfortable. Daines identifies consequences that educators must be willing to experience if learning of thinking processes is to be a central educational goal. Some of these consequences include the probability that less content will be covered, that teachers will not only have to deal with but actually encourage students who will challenge the teachers' positions and thinking, and that teachers themselves will need to spend more time thinking (and this will mean less time doing something that now occupies that time).

Anderson cautions against an oversimplified view of learners and urges teachers to focus attention on differences in thinking patterns likely to exist among their students. This information is useful for anticipating where given students may have problems and also for helping students to become more conscious of their own thinking processes. Further, such awareness should help teachers avoid making assumptions that the same learning experience necessarily produced similar learning across learners. This caution might also be extended beyond gender differences to differences in learning styles, particularly those which appear to be based on differences in the ways people process information. A challenge for teachers suggested by the existence of these differences is that instructional designs must be systematically varied to address the different needs of different learners within the same learner group. This means that different ways of teaching need to be continually incorporated in instructional design. It may also mean developing several different approaches to learning a concept and giving students a choice of which way they would like to learn.

Fedje's article makes clear that complex thought processes can be incorporated in the most ordinary and basic activities (reading, writing, and listening) that students typically engage in much of the time in education if these activities are approached in certain ways. Exotic and highly unusual teaching approaches **are not** required to engage students in thinking. Carefully planned and skillfully executed instructional designs aimed at developing thinking skills **are** required.

The idea of what it means to be engaged in thinking sometimes conjures up the mental image of a person sitting quietly alone, looking thoughtful and pondering deep thoughts. Way's article presents quite a different image of what students might be doing as they engage in thinking. Way points out how the action-oriented activities that the Future Homemakers of America (FHA) student organization provides can become opportunities for students to experience and practice complex thinking skills. She, like Fedje, however, notes that it is how these activities are organized and carried out that is a crucial factor in whether or not they contribute to building thinking process skills. In other words, simply engaging students in activities such as reading, writing, listening, and FHA projects will not assure that the students are experiencing or learning complex thought processes. These activities need to be carefully structured and designed with the **intention** to provide experience in thinking.

Hultgren emphasizes the importance of students actually experiencing thinking processes if they are to integrate thinking skills as a part of their being rather than simply storing a meaningless, but memorized, sequence of steps. The proof of whether or not thinking skills are truly integrated is whether or not students can use them appropriately and bring them to bear in new, unfamiliar problem situations.

Janet Laster's article on problem solving summarizes, within a context of home economics education, some of the recent and rapidly expanding research on problem solving. Two questions her article leads to are: 1) to what extent are problem solving processes incorporated into home economics instruction, and, 2) how much experience is home economics instruction providing students in dealing with ill-structured problems, the kind that will inevitably be the most challenging for them to face in life, and the kind in which there will be no recipes, no already developed procedures to be followed, no kits already packaged, and no conventions to be adhered to.

The discussion of both the kind of thought processes involved in practical reasoning and relevant teaching processes Laster provides in her second article develops meaning for the concept of practical reasoning, and provides useful guidance in envisioning how teaching it might be approached. Seeing practical reasoning as a central thinking process for identifying and solving problems of daily life, and for resolving policy questions regarding the family and human well being, makes clear **why** it is a thinking process central in home economics and why home economics is interdisciplinary in nature. It is also clear that in order to integrate such teaching designs into home economics instruction, a few, carefully selected problem areas to be explored in depth will need to be identified as opposed to dealing with a large number of problem areas, none of which will be able to be allocated sufficient time to work through the entire practical reasoning process. This article supports Daines' point that teaching for thinking requires a willingness to place less emphasis on "covering the content" and more on indepth investigation of a few highly significant problems areas.

Summary, Conclusions and Recommendations

Slogans serve useful purposes in focusing attention on and gathering acceptance and support for a concept. Few examples of the use of slogans for these purposes are as vivid as is the use of higher order thinking skills in discussions about the problems and needed directions in education today. While slogans are functional for these purposes, they are not functional for developing understanding of an idea or in implementing the idea. Unless a concept can be moved beyond a slogan level, it is unlikely to ever "take hold" or make a difference in educational practice. Slogans tend to abound when knowledge is lacking. The widespread use of higher order thinking skills to mean many different things reflects, to some extent, the current state of knowledge about higher levels of thinking, although such knowledge is rapidly increasing.

One need in moving beyond slogans to concepts regarding higher order thinking that can be communicated in meaningful ways and implemented in home economics instruction is more extensive knowledge about these processes and their acquisition. This knowledge should be provided, in part, by research within the field of home economics education and, in part, by awareness of developing knowledge from other fields.

A second need in order to move beyond a slogan level in dealing with the concept of higher order thinking skills concerns teachers' approaches to developing instruction. Some actions and awarenesses needed by teachers interested in moving beyond using higher order thinking skills as a slogan term to in-depth understanding of these skills and authentic implementation of them in home economics instruction include:

1. Devoting attention, energy and time to careful and precise communication among home economics educators and other colleagues regarding the thinking skills that are and should be taught in home economics.

2. Devoting attention, energy and time to study of and detailed thinking through and description of thinking processes to be learned, processes for learning and teaching them, and the problems of concern in home economics to which the thinking processes are relevant.

3. Alertness to the probabilities that learners will be diverse in their thinking patterns and learning styles and to the implications of this diversity for instructional design.

4. Considering how presently used learning activities might achieve a greater range of educational ends, especially the learning of thinking skills.

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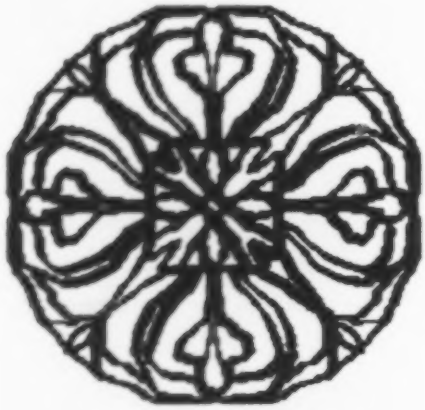
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